

CADD Roadway Drafting Reference Guide Illinois Department of Transportation

Table of Contents

	4				100		
ır	۱۲۱	r۸	a	ш	cti	n	n
••	L		v	u	L)L	I L J	

Set-Up Procedures For Design

Design Naming Conventions

Photogrammetric Mapping Systems

Suggested Drafting Techniques-Metric

Level Assignments

Common Cell Abbreviations

Alphabetic Index To Cell Library

Numeric (By Name) Index To Cell Library

Cell Library

Introduction

This Reference Guide prepared and distributed by the Illinois Department of Transportation (IDOT) is to promote uniform Computer Aided Drafting and Design (CADD) usage in roadway drafting. Also, these requirements and procedures provide a basis for common interchange of CADD related planimetric data files between the Illinois Department of Transportation, Division of Highways, and outside contractors and consultants. The guide is not a substitute for CADD knowledge, experience or judgment, nor is it a set of inflexible rules. Requirements listed in the Professional Transportation Bulletin (PTB) or individual district contract specifications may supersede some of the guidelines recommended in this publication. The Department's CADD professionals assume that the user's general level of understanding and prior knowledge is that of an experienced user of CADD technology.

The information and CADD data described in this guide are subject to change and is not a permanent commitment by the IDOT, Division of Highways. Organizations exchanging IDOT CADD data are responsible for ensuring they are using the current version of these requirements, CADD Reference Manuals, and IDOT cell files. IDOT assumes no responsibility for any errors that may appear in this document.

The following paragraphs state the Illinois Department of Transportation's current position regarding the exchange of CADD data.

Graphic File Format

CADD compatible file for the IDOT Division of Highways means that all CADD files must be in MicroStation J .DGN format. This requirement ensures that IDOT receives a final product that is directly usable on IDOT's CADD systems without additional work. MicroStation J supports two file formats (J and 5.x). This allows the consultant and the Department to use J or 5.x versions of MicroStation and provide each other files in 5.x format. The Professional Transportation Bulletin contains the department's current version of MicroStation and upgrade plans. The responsibility for providing a complete, correct CADD data disk rests with the consultant or contractor. All CADD files provided by IDOT will also be in MicroStation J or 5.x .DGN format. This ensures that all planimetric data is available to the consultant or contractor and that there is no data loss in a translation process. IDOT will create and retain a duplicate set of these files.

The department utilizes MicroStation CADD software features that may not translate directly to other systems. For example, IDOT cell libraries define standard plan and plan and profile sheet borders. Another example is the department's use of reference files. IDOT prefers that the plan or plan and profile form utilize MicroStation's reference file feature. This permits plotting of final drawings using a "virtual" copy of the continuous design so that repeated changes will not be necessary in several places. When translated to some other CADD systems, the "virtual" move does not occur and sheets appear blank. Each of the CADD software vendors employs proprietary features that may also result in problems when translations are necessary. The responsibility to provide the department with correct and complete CADD data rests with the consultant or contractor.

Reference Guide Updates

Changes in CADD roadway drafting by IDOT will result in periodic updates of this reference guide. All district systems receive these changes within a reasonably short time frame. The District's CADD systems normally receive software upgrades as they are produced.

Updates to this guide will be made available concurrently with the changes to the CADD systems.

Obtaining Roadway Cell Libraries

The cell libraries and the CADD Roadway Drafting Reference Guide are updated as needed. It is the responsibility of the consultant or the contractor to use current cell libraries and to follow currently specified drafting procedures. In order to assure this, it is recommended that your firm's senior CADD person meet with his/her counterpart in the district before starting any new project work.

CHAPTER 2

Metric Set-Up Procedures For Design

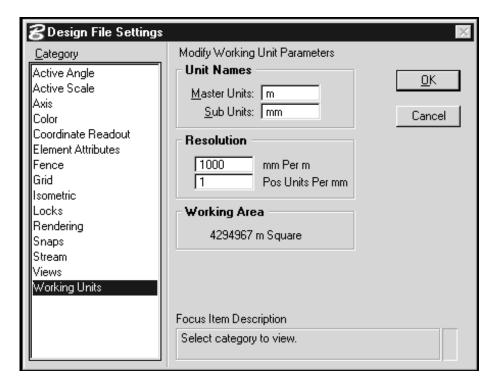
File Format

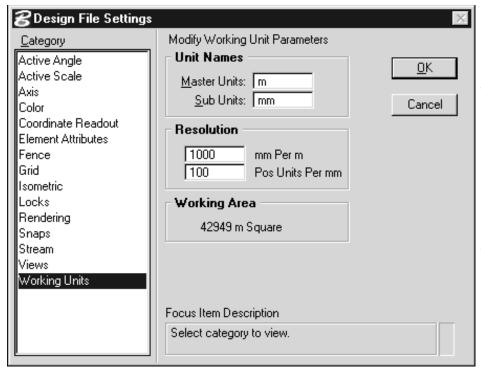
MicroStation Design files use a '.DGN' extension. MicroStation systems use a 'seed file' to create all successive design files. The 'seed file' provides standard parameters for each file created. This allows optimal accuracy and standardization. The 'seed file' parameters considered necessary to begin the design or edit session should include, but not be limited to, the parameters listed in this document. There are several other standards and parameters that the 'seed file' does not set. Non-seed file' parameters could include line weight, line style (that is, dashed, solid, etc.), color, and level assignment. The following narrative uses MicroStation specific commands and terminology to describe standardization with IDOT's use of CADD. The images used represent MicroStation Version 5.

Plan & Cross Section Files

Every operation during a 2D-design session takes place relative to a design plane. The design plane is a Cartesian coordinate system upon which the design resides. There is a finite number of 'UNITS OF RESOLUTION', or UOR's that reside within the design plane. These UOR's may be divided into an intelligent definition and assigned real world values. The values that IDOT uses are defined one time in the seed file.

Format for the 'WORKING UNITS' is MU:SU:PU (Master Units, Sub Units, and Positional Units). There is a userspecified number of Sub Units per Master Unit and a user specified number of Positional Units per Sub Unit. The working units for plans are described by IDOT as 1 PU's per SU, and 1000 SU's per MU, with the Master Unit being one meter. This allows drawing precision to the nearest millimeter.



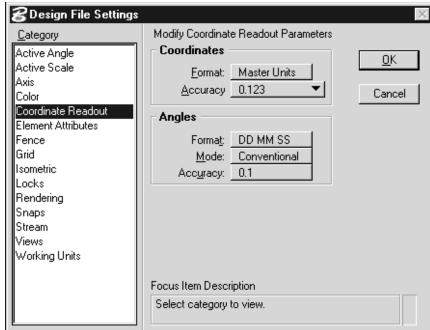


The working units for cross sections are described by IDOT as 10 PU's per SU, and 1000 SU's per MU, with the Master Unit being one meter. This allows drawing precision to the nearest tenth of a millimeter.

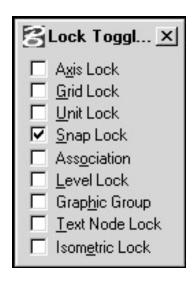
MicroStation allows the working units to be displayed in several different ways. The dis-

play specification may be reviewed or changed by selecting the 'settings' pull down menu and the coordinate readout dialog box. The format chosen by IDOT is decimal Master Units, having three significant digits to the right of the decimal point. In addition, within the same dialog box, angle format is selected specifying 'DEGREES, MINUTES, and SECONDS' to be used.

Rounding of numbers will occur during computations necessary for the design session to take place. Angle and Scale round-off



values are specified using the coordinate readout dialog box. The IDOT specification is .0010 for Master Units and the specification for 'ANGLE ROUNDOFF' is 0°0'0.0"

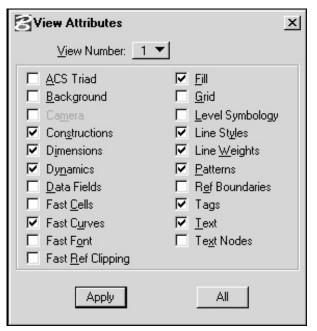


MicroStation uses a series of 'Locks'. All 'Locks' except 'SNAP KEYPOINT LOCK' should be toggled to the off position.

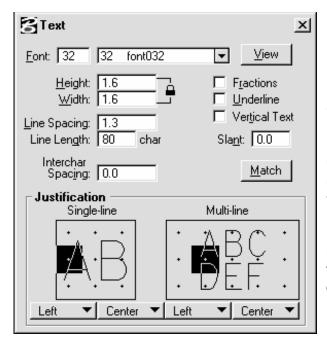
The 'DISPLAY ON/OFF' commands found in the **view attributes** dialog box permit certain classes of elements to be selectively eliminated from view in any 'DESIGN FILE'. The following figure shows the display settings used in the IDOT 'seed file'. The 'seed file' IDOT

uses has the 'GLOBAL ORIGIN' set so the 0,0 is found the individual district) from State Plane Coordinates to reduce confusion over which coordinate system is being used.

'FAST DISPLAY' is a mode that will allow selection of four graphic representations, cells, curves, text, and font to be displayed in an abbreviated form. The IDOT specification for displaying the above elements is a full representation of each element.



The 'TEXT SIZE' specification used in the 'seed file' is 1.6 meters in height, and 1.6 meters in width. 'TEXT SIZE' is 1.6 meters when drawing at a ratio of 1:500,



the 'TEXT SIZE' should be changed as other scales are indicated. 'TEXT SIZE' size is selected using 'TX= (value)'. 'LINE SPACING' is also a parameter described in the 'seed file' and is set at 1.3 meters using 'LS= (value)'. The 'TEXT NODE LINE LENGTH' is set in the design file at a length of eighty characters. The values for 'TEXT SIZE', 'LINE SPAC-ING' and 'TEXT NODE LINE LENGTH' are arbitrary values used to begin a design session; they are not necessarily standards for drafting.

Line Weight' is by IDOT definition a 'Non-Seedfile' parameter. 'Line Weight' can be described as line width ranging from the narrowest (weight 0) to the widest (weight 31). Line weight is changeable during an edit session using the key-in 'WT= (value)'. Differing line weights are necessary to describe and differentiate lines used to depict R.O.W.'s, easements, setbacks, properties, etc.

All design files created use a default font library. The IDOT default library is named 'fontlib.rsc.' Fonts most often used by IDOT are named 32, 40, and 115. Examples of the default font library are shown below.

FONT TYPE: 32

UPPER: ABCDEFGHIJKLMNOPQRSTUVWXYZ

LOWER: abcdefghijklmnopqrstuvwxyz

NUMERALS: 1234567890

SPEC. CHAR.: ¢△@#\$%%∠ر<>₱₿

FONT TYPE: 40

UPPER: ABCDEFGHIJKLMNOPQRSTUVWXYZ

LOWER: abcdefghijklmnopqrstuvwxyz

NUMERALS: 1234567890

SPEC. CHAR.: ¢△@#\$%°&∠ر<>₱₿

FONT TYPE: 115

UPPER: ABCDEFGHIJKLMNOPQRSTUVWXYZ

LOWER: abcdefghijklmnopgrstuvwxyz

NUMERALS: 1234567890

SPEC. CHAR.: ~!@#\$% ^&{}| < > `\

Colors are used by IDOT as an aid for the workstation operators. When a color is selected 'CO = (value)', a level is also selected LV = (value)' where the value is the same for both specifications. The only exception to 'color equals level' occurs when levels fifty-seven and fifty-eight are used to place utilities.

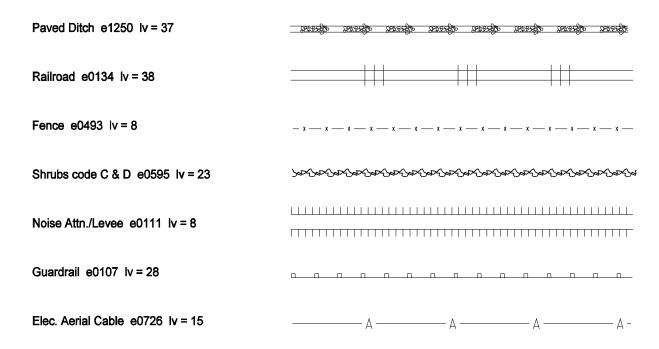
In such case, the colors used should adhere to the standards set forth by the American Public Works Association, Utility Location & Coordination Council Uniform Color Code. Copies of the Uniform Color Code may be purchased from:

AMERICAN PUBLIC WORKS ASSOCIATION 1313 E. 60^{TH} ST. CHICAGO, IL 60637

'Line Code' is another user definable parameter used by IDOT to allow discrimination of line descriptions. 'Line Code' is keyed in using 'LC= (value)' and can define solid, dotted, medium dashed, long dashed, etc. There are a total of eight line codes described by MicroStation using digits zero through seven for selection.

LC	Ξ	0	Solid Line —
LC	Ξ	1	Dotted Line
LC	Ξ	2	Medium Dashed Line
LC	Ξ	3	Long Dashed Line
LC	Ξ	4	Dash-Dot Line
LC	Ξ	5	Short Dashed Line
LC	Ξ	6	Dash-Dot-Dot Line
LC	=	7	Long Dashed-Short Dashed Line

IDOT has assigned specific user defined line styles for plan preparation and topographic data. Line styles have unique color, weight, and level based on their application. The Settings Manager provided by IDOT automates the selection and placement process for the user. A few line styles are shown below for examples. A complete list appears in Standard 000001 and in the Settings Manager. Many times the same line style applies to both existing and proposed work but will appear different due to color, weight, and level.



Settings manager (sm99e.stg for English and sm99m.stg for metric) provides access to project standard drawing components and settings. It is a drawing management tool to control cell placement, project symbology, custom line styles, scales and working units. The settings manager allows the designer to work in specific groups according to level requirements and to provide accuracy in placement of both existing and proposed data. The four primary actions the settings manager controls are cell placement, area patterning, text placement and line or line style placement. The scale settings (scales.stg) control the output to keep all the components in the same relative scale. The current settings manager and its related files, such as the abbreviation glossary and color tables, may be downloaded from the IDOT web site at any time.

CHAPTER 2

English Set-Up Procedures For Design

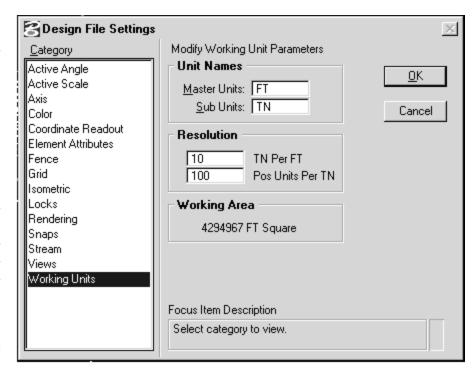
File Format

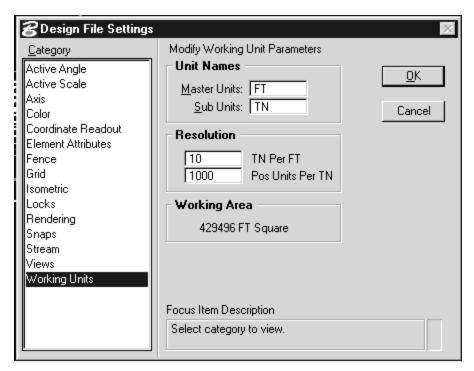
MicroStation Design files use a '.DGN' extension. MicroStation systems use a 'seed file' to create all successive design files. The 'seed file' provides standard parameters for each file created. This allows optimal accuracy and standardization. The 'seed file' parameters considered necessary to begin the design or edit session should include, but not be limited to, the parameters listed in this document. There are several other standards and parameters that the 'seed file' does not set. Non-seed file' parameters could include line weight, line style (that is, dashed, solid, etc.), color, and level assignment. The following narrative uses MicroStation specific commands and terminology to describe standardization with IDOT's use of CADD. The images used represent MicroStation Version 5.

Plan & Cross Section Files

Every operation during a 2D-design session takes place relative to a design plane. The design plane is a Cartesian coordinate system upon which the design resides. There is a finite number of 'UNITS OF RESOLUTION', or UOR's that reside within the design plane. These UOR's may be divided into an intelligent definition and assigned real world values. The values that IDOT uses are defined one time in the seed file.

Format for the 'WORKING UNITS' is MU:SU:PU (Master Units, Sub Units, and Positional Units). There is a user-specified number of Sub Units per Master Unit and a user specified number of Positional Units per Sub Unit. The working units for plans are described by IDOT as 100 PU's per SU, and 10 SU's per MU, with the Master Unit being one foot. This allows drawing precision to the nearest one-thousandth of a foot.



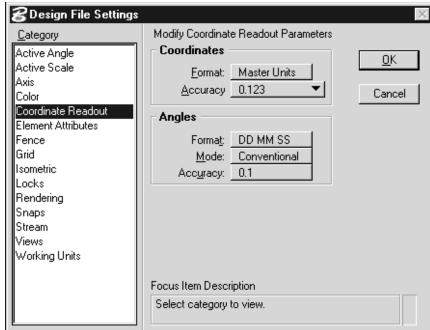


The working units for cross sections are described by IDOT as 1000 PU's per SU, and 10 SU's per MU, with the Master Unit being one foot. This allows drawing precision to the nearest ten-thousandth of a foot.

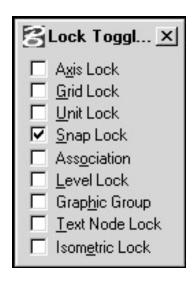
MicroStation allows the working units to be displayed in several different ways. The dis-

play specification may be reviewed or changed by selecting the 'settings' pull down menu and the coordinate readout dialog box. The format chosen by IDOT is decimal Master Units, having three significant digits to the right of the decimal point. In addition, within the same dialog box, angle format is selected specifying 'DEGREES, MINUTES, and SECONDS' to be used.

Rounding of numbers will occur during computations necessary for the design session to take place. Angle and Scale round-off



values are specified using the coordinate readout dialog box. The IDOT specification is .0010 for Master Units and the specification for 'ANGLE ROUNDOFF' is 0°0'0.0"

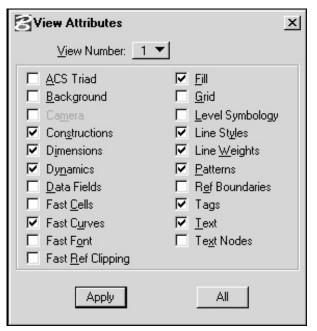


MicroStation uses a series of 'Locks'. All 'Locks' except 'SNAP KEYPOINT LOCK' should be toggled to the off position.

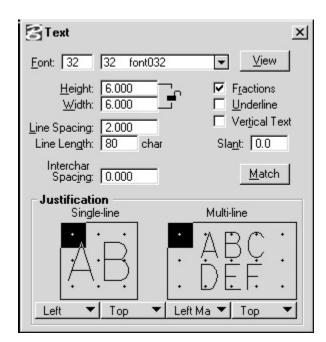
The 'DISPLAY ON/OFF' commands found in the **view attributes** dialog box permit certain classes of elements to be selectively eliminated from view in any 'DESIGN FILE'. The following figure shows the display settings used in the IDOT 'seed file'. The 'seed file' IDOT

uses has the 'GLOBAL ORIGIN' set so the 0,0 is found the individual district) from State Plane Coordinates to reduce confusion over which coordinate system is being used.

'FAST DISPLAY' is a mode that will allow selection of four graphic representations, cells, curves, text, and font to be displayed in an abbreviated form. The IDOT specification for displaying the above elements is a full representation of each element.



The 'TEXT SIZE' specification used in the 'seed file' is six feet in height, and six feet in width. 'TEXT SIZE' is six feet when drawing at a ratio of 1:600, the 'TEXT



SIZE' should be changed as other scales are indicated. 'TEXT SIZE' size is selected using 'TX= (value)'. 'LINE SPACING' is also a parameter described in the 'seed file' and is set at five feet using 'LS= (value)'. The 'TEXT NODE LINE LENGTH' is set in the design file at a length of eighty characters. The values for 'TEXT SIZE', 'LINE SPACING' and 'TEXT NODE LINE LENGTH' are arbitrary values used to begin a design session; they are not necessarily standards for drafting.

Line Weight' is by IDOT definition a 'Non-Seedfile' parameter. 'Line Weight' can be described as line width ranging from the narrowest (weight 0) to the widest (weight 31). Line weight is changeable during an edit session using the key-in 'WT= (value)'. Differing line weights are necessary to describe and differentiate lines used to depict R.O.W.'s, easements, setbacks, properties, etc.

All design files created use a default font library. The IDOT default library is named 'fontlib.rsc.' Fonts most often used by IDOT are named 32, 40, and 115. Examples of the default font library are shown below.

FONT TYPE: 32

UPPER: ABCDEFGHIJKLMNOPQRSTUVWXYZ

LOWER: abcdefghijklmnopqrstuvwxyz

NUMERALS: 1234567890

SPEC. CHAR.: ¢△@#\$%%∠ر<>₽₿

FONT TYPE: 40

UPPER: ABCDEFGHIJKLMNOPQRSTUVWXYZ

LOWER: abcdefghijklmnopqrstuvwxyz

NUMERALS: 1234567890

SPEC. CHAR.: \$\psi_\omega #\$\%\circ \\ \Omega \psi \\ \Omega \psi_\omega \\ \Omega \\ \Omega \psi_\omega \\ \Omega \\ \Omega \psi_\omega \\ \Omega \quad \Omega \quad \Omega \\ \Omega \quad \Omega \quad \Omega \quad \\ \Omega \quad \Omega \quad \\ \Omega \quad \Omega \quad \Omega \quad \\ \Omega \quad \Omega \quad \Omega \quad \\ \Omega \quad \\ \Omega \quad \Omega \quad \\ \Omega \quad \Omega \quad \\ \Omega \quad \\ \Omega \quad \Omega \quad \\ \Omeg

FONT TYPE: 115

UPPER: ABCDEFGHIJKLMNOPQRSTUVWXYZ

LOWER: abcdefghijklmnopgrstuvwxyz

NUMERALS: 1234567890

SPEC. CHAR.: ~!@#\$% ^&{}| < > `\

Colors are used by IDOT as an aid for the workstation operators. When a color is selected 'CO = (value)', a level is also selected LV = (value)' where the value is the same for both specifications. The only exception to 'color equals level' occurs when levels fifty-seven and fifty-eight are used to place utilities.

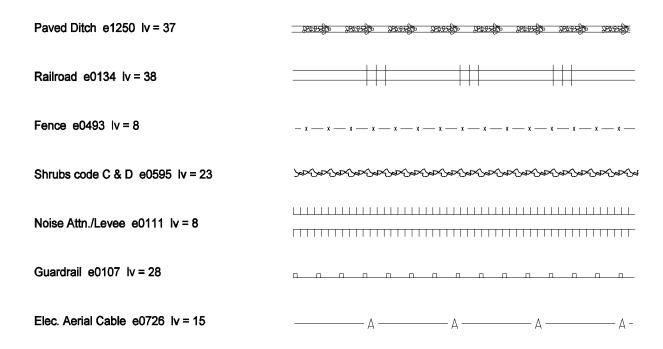
In such case, the colors used should adhere to the standards set forth by the American Public Works Association, Utility Location & Coordination Council Uniform Color Code. Copies of the Uniform Color Code may be purchased from:

AMERICAN PUBLIC WORKS ASSOCIATION 1313 E. 60^{TH} ST. CHICAGO, IL 60637

'Line Code' is another user definable parameter used by IDOT to allow discrimination of line descriptions. 'Line Code' is keyed in using 'LC= (value)' and can define solid, dotted, medium dashed, long dashed, etc. There are a total of eight line codes described by MicroStation using digits zero through seven for selection.

LC	Ξ	0	Solid Line —
LC	Ξ	1	Dotted Line
LC	Ξ	2	Medium Dashed Line
LC	Ξ	3	Long Dashed Line
LC	Ξ	4	Dash-Dot Line
LC	Ξ	5	Short Dashed Line
LC	Ξ	6	Dash-Dot-Dot Line
LC	=	7	Long Dashed-Short Dashed Line

IDOT has assigned specific user defined line styles for plan preparation and topographic data. Line styles have unique color, weight, and level based on their application. The Settings Manager provided by IDOT automates the selection and placement process for the user. A few line styles are shown below for examples. A complete list appears in Standard 000001 and in the Settings Manager. Many times the same line style applies to both existing and proposed work but will appear different due to color, weight, and level.



Settings manager (sm99e.stg for English and sm99m.stg for metric) provides access to project standard drawing components and settings. It is a drawing management tool to control cell placement, project symbology, custom line styles, scales and working units. The settings manager allows the designer to work in specific groups according to level requirements and to provide accuracy in placement of both existing and proposed data. The four primary actions the settings manager controls are cell placement, area patterning, text placement and line or line style placement. The scale settings (scales.stg) control the output to keep all the components in the same relative scale. The current settings manager and its related files, such as the abbreviation glossary and color tables, may be downloaded from the IDOT web site at any time.

CHAPTER 3

Metric Design Naming Conventions

IDOT Naming Procedure

Project Naming Convention

The districts will assign project numbers that will reside with a job for its duration. The first character of the project will indicate the type of working units, M for metric and E for English, followed by the bureau code, sequence number and year. The design file name will be limited to an eight-character field.

For example: State Job Number P-91-051-86 will be MP05186 for a Metric project.

Valid Bureau Codes

Administrative Services Α C Construction Design D E Electric Land Acquisition L Maintenance М **Planning** R Local Roads and Streets Expressway Surveillance S Traffic Т Materials

SEQ. Number

This is the 3 digit sequential number from the State-Job-Number.

Year

This is a calendar year from the State-Job-Number for all jobs except Land Acquisition. This is fiscal year from the State-Job-Number for Land Acquisition jobs.

File Naming Conventions

We recommend that design files be limited in size to 2.0-2.5 Mb and should always break before and after any major intersection or structure. When assigning the names, it is recommended to use file names that are sequential and relative to their contents, for example:

PLN001.DGN would be a topo file.

SHT001.DGN would contain any sheets that an operator uses during the course of

plan preparation.

TIN001.DGN is used by the designer for TIN model placement.

XSEC01.DGN is used by the designer for placing existing and proposed cross sec-

tions.

The districts will assign the project number to a job when the Aerial Surveys Section passes aerial photography projects to them. It will be the responsibility of the districts to maintain the name convention link between their project number and the previous number as as signed by Aerial Surveys. If Aerial Surveys is to provide a vendor with files, the appropriate district should be notified and involved to assign the proper job number for the files being transmitted.

Pertinent Project Information

ROUTE: U.S. 30 Aerial Project: D-1622

FA Route Designation: FAP 607 Project Limits: III. Rte. 59 to Briar St.

Sta. 15+000 to Sta. 21+300

County: Will

State Job Number: P-91-051-86 Project: MP05186

FILES TRANSMITTED

SHT001.DGN;1	15+000 - 15+350	Douglas StWilcox/Mason
SHT002.DGN;1	15+350 - 15+700	Wilcox/Mason
SHT003.DGN;1	15+700 - 16+050	Black Rd/Ruby St/Raynor Ave.
SHT004.DGN;1	16+050 - 16+400	Schriber Ave/Waverly Pl.
SHT005.DGN;1	16+400 - 16+750	Williams Street
SHT006.DGN;1	16+750 - 17+100	Clara Ave.
SHT007.DGN;1	17+100 - 17+450	Ingalls Ave.
SHT008.DGN;1	17+450 - 17+800	Ingalls Ave Connecticut Ave.
SHT009.DGN;1	17+800 - 18+150	Connecticut Ave-Massachusetts
SHT010.DGN;1	18+150 - 18+500	Pennsylvania Ave.
SHT011.DGN;1	18+500 - 18+850	Buckman Ave.
SHT012.DGN;1	18+850 - 19+200	Buckman Ave-III 7 (Theodore)
SHT013.DGN;1	19+200 - 19+550	III 7 - Larkin Ave.
SHT014.DGN;1	19+550 - 19+900	Larkin Ave.
SHT015.DGN;1	19+900 - 20+250	E.J. & E. RR
SHT016.DGN;1	20+250 - 20+600	Leness Lane
SHT017.DGN;1	20+600 - 20+950	
SHT018.DGN;1	20+950 - 21+300	Fern StSweet Briar St.
SHT019.DGN;1	Plan & Profile Sheets	

CHAPTER 3

English Design Naming Conventions

IDOT Naming Procedure

Project Naming Convention

The districts will assign project numbers that will reside with a job for its duration. The first character of the project will indicate the type of working units, M for metric and E for English, followed by the bureau code, sequence number and year. The design file name will be limited to an eight-character field.

For example: State Job Number P-91-051-86 will be MP05186 for a Metric project.

Valid Bureau Codes

Administrative Services Α C Construction Design D E Electric Land Acquisition L Maintenance М **Planning** R Local Roads and Streets Expressway Surveillance S Traffic Т Materials

SEQ. Number

This is the 3 digit sequential number from the State-Job-Number.

Year

This is a calendar year from the State-Job-Number for all jobs except Land Acquisition. This is fiscal year from the State-Job-Number for Land Acquisition jobs.

File Naming Conventions

We recommend that design files be limited in size to 2.0-2.5 Mb and should always break before and after any major intersection or structure. When assigning the names, it is recommended to use file names that are sequential and relative to their contents, for example:

PLN001.DGN would be a topo file.

SHT001.DGN would contain any sheets that an operator uses during the course of

plan preparation.

TIN001.DGN is used by the designer for TIN model placement.

XSEC01.DGN is used by the designer for placing existing and proposed cross sec-

tions.

The districts will assign the project number to a job when the Aerial Surveys Section passes aerial photography projects to them. It will be the responsibility of the districts to maintain the name convention link between their project number and the previous number as as signed by Aerial Surveys. If Aerial Surveys is to provide a vendor with files, the appropriate district should be notified and involved to assign the proper job number for the files being transmitted.

Pertinent Project Information

ROUTE: U.S. 30 Aerial Project: D-1622

FA Route Designation: FAP 607
Project Limits: III. Rte. 59 to Briar St.

Sta. 77+00 to Sta. 246+00

County: Will

State Job Number: P-91-051-86 Project: MP05186

FILES TRANSMITTED

SHT001.DGN;1	100+00 - 107+00	Douglas StWilcox/Mason
SHT002.DGN;1	107+00 - 115+00	Wilcox/Mason
SHT003.DGN;1	115+00 - 123+00	Black Rd/Ruby St/Raynor Ave.
SHT004.DGN;1	123+00 - 131+00	Schriber Ave/Waverly Pl.
SHT005.DGN;1	131+00 - 139+00	Williams Street
SHT006.DGN;1	139+00 - 147+00	Clara Ave.
SHT007.DGN;1	147+00 - 155+00	Ingalls Ave.
SHT008.DGN;1	155+00 - 163+00	Ingalls Ave Connecticut Ave.
SHT009.DGN;1	163+00 - 172+00	Connecticut Ave-Massachusetts
SHT010.DGN;1	172+00 - 180+00	Pennsylvania Ave.
SHT011.DGN;1	180+00 - 189+00	Buckman Ave.
SHT012.DGN;1	189+00 - 197+00	Buckman Ave-III 7 (Theodore)
SHT013.DGN;1	197+00 - 206+00	III 7 - Larkin Ave.
SHT014.DGN;1	206+00 - 214+00	Larkin Ave.
SHT015.DGN;1	214+00 - 223+00	E.J. & E. RR
SHT016.DGN;1	223+00 - 230+00	Leness Lane
SHT017.DGN;1	230+00 - 238+00	
SHT018.DGN;1	238+00 - 246+00	Fern StSweet Briar St.
SHT019.DGN;1	Plan & Profile Sheets	

CHAPTER 4

Metric Photogrammetric Mapping Systems

General

These guidelines are to be used for the preparation of all large-scale mapping of 1:1200 or larger.

Compilation

Mapping shall be compiled by photogrammetric methods using precision photogrammetric instruments. Unless otherwise stated, mapping standards designed for highway district use are to be used. See Exhibits A & B at the end of this chapter.

Editing

Compilation drawings shall be prepared in such a way that maps possess clear symbol definition at the specified scale. These guidelines shall be used for the following items:

Line weights and styles Text style
Lettering placement Text size

Symbology Treatment of marginal notes

Map Contents

Map Coordinates

A coordinate grid system shall be established for all mapping and be shown as follows:

- When hard copies are requested, grid ticks shall be spaced at 200 mm intervals.
- Grid values shall be shown on the mapping manuscripts and shall be placed approximately 25 mm from the sheet edge.
- The vertical and horizontal data shall be identified on a title sheet.

Whenever ground control surveys are **not** tied to survey monuments of the Illinois Plane Coordinate System, a system of plane coordinates, positive in value, shall be established and numbered

Unless otherwise specified, all ground control surveys for the mapping shall be tied to the survey monuments of the existing State Plane Coordinate System to the North American Datum of 1983.

Planimetry

The maps shall contain all planimetric features, which are visible or identifiable on, or are interpretable from, the aerial photography including land use features such as:

ditches buildings canals reservoirs trails levees railroads ferry slips quarries cemeteries borrow pits orchards wooded areas individual large trees culverts bridges trestles tunnels piers retaining walls dams storage tanks (oil, water, etc.) power plants airfields transportation terminals curb & gutter sidewalks driveways hydrants manholes telephone lines telegraph lines paved ditches

roads (highways)

transformer & other substations

electric power transmission lines, poles & towers.

A field survey crew shall annotate features on photos that are not interpretable from the aerial photography. (See Exhibit D).

Buildings and similar dimensioned objects shall be correctly outlined and oriented, and shall be to actual size, except that dimensions smaller than 2.5 mm at map scale shall be symbolized by 2.5 mm in size. Minor irregularities in building outlines not represented by 1.25 mm at map scale shall be ignored.

The principal point of each photograph used in making the maps shall be shown on the maps.

Horizontal control stations used in making the maps shall be shown.

All mapped information shall be shown in accordance with the symbols, style, and line weights shown in Exhibit B.

Spot Elevations

Digital Terrain Mapping (DTM) does not require spot elevations.

Contours

Within accuracy requirements, contours shall be drawn to represent true elevation above mean sea level and the exact shape of the ground. Each contour shall be drawn as a solid line. Where the ground data is unreliable or cannot be seen due to heavy brush, tree cover, or other obstructions, it may be outlined with a VOID shape on level 60. The contours will be omitted in that area and the following note of explanation will be added to level 60, "GROUND DATA OMITTED DUE TO OBSTRUCTED VIEW". If you do not have this capability, the contours in such areas may be omitted or shown as dashed lines. The dashed lines shall be plotted as accurately as possible from the stereoscopic model. A note of explanation shall be added to the area.

To establish index contours, every fourth contour shall be accentuated as a heavier line than the intermediate three contours and shall be numbered according to its actual elevation above mean sea level. Index values shall be placed every 125 mm at map scale.

Names & Labels

Text for control points and stand-alone objects shall be parallel to the main alignment. Labels for retaining walls, paved ditches, billboards, surface types may be parallel to the main alignment or to the object. Names for streets perpendicular to the main alignment should read from the right. Structures will be labeled parallel to the base of the structure.

Digital Terrain Model Data

The MicroStation 3D file format will be used for all map files that contain DTM data. Lines that represent breaklines will be 3D elements and symbols that represent mass points will be 2D cells. Within accuracy requirements, the vertices of the breaklines and the mass point symbols placed in the design file shall represent true elevation above mean sea level and represent the exact shape of the ground. The mass point grid spacing shall not exceed 30 feet and breaklines shall be developed to provide a true representation of the ground surface.

All DTM files will contain the following:

- standard map features (see MAP CONTENTS)
- mass points on level 32
- breaklines on level 56
- void lines on level 60
- generated contours on level 26
- a boundary polygon on level 56

Deliverables to the Department on digital CD-ROM will consist of:

- 3D file (use extension ". 3d") these files contain all mapping data.
- 2D file (use extension ". pln") these files contain planimetric features only.
- ASCII files (use extension ". asc") these files contain the DTM data in ASCII format.

Definitions

Voids are ground areas that cannot be seen by a stereoplotter operator. The cause is usually foliage, but can be structures. Void lines are not required where building "lean" obscures the ground. The "void" line can be made of any number of segments, but must be made into a MicroStation complex shape upon completion. These are used in GEOPAK as "Void" lines during data extraction. Voids can be used where the DTM applications create an incorrect interpretation of the ground. A bridge deck that begins after a cantilevered section of pavement is one instance where a void placed along the cantilevered section and around the deck solves such a problem. Void Lines also have additional specifications of line weight 2, line code 2, color 2 and a complex shape.

Boundary Polygons, sometimes referred to as Sewing Edges, surround each mapped model. They consist of segments of profile that touch on all DTM elements at the mapping limits. When completed, the segments are made into a MicroStation complex element, complex status dropped and used in GEOPAK as a "Boundary" element during data extraction. The purpose of this is to

create a self-contained model, where contours stop at the map limits and can be recreated without the need for data from tie models. Boundary Polygons also have additional specifications of line weight 0, line code 2, color 14 and a complex element/dropped.

For further details on DTM, refer to the document titled "Standards for the Collection of Digital Terrain Model (DTM) Data".

Disposition Diagram

A disposition diagram shall be prepared for each project to show the position and relationship of all mapping sheets and/or models to each other. The diagram shall include the following:

- coordinate system used to control the project
- proper positioning of horizontal ground control
- sheet layout and the delineation of the mapping model
- principal points and photo number of each photograph
- north arrow cell (c00294)
- model/file names
- sketch of roadway
- mapping limits
- date prepared
- initials of preparer
- scale of photography
- scale of diagram
- building classification cell (c00309)
- legend of symbols cell (c00391)
- disclaimer note cell (c00312)
- grid factor note with horizontal and vertical notes cell (c00301 for NAD 83 or c00293 for NAD 27)
- arbitrary grid note cell (c00322)
- title block cell (c00290)

A title block is to be included which shall consist of the following:

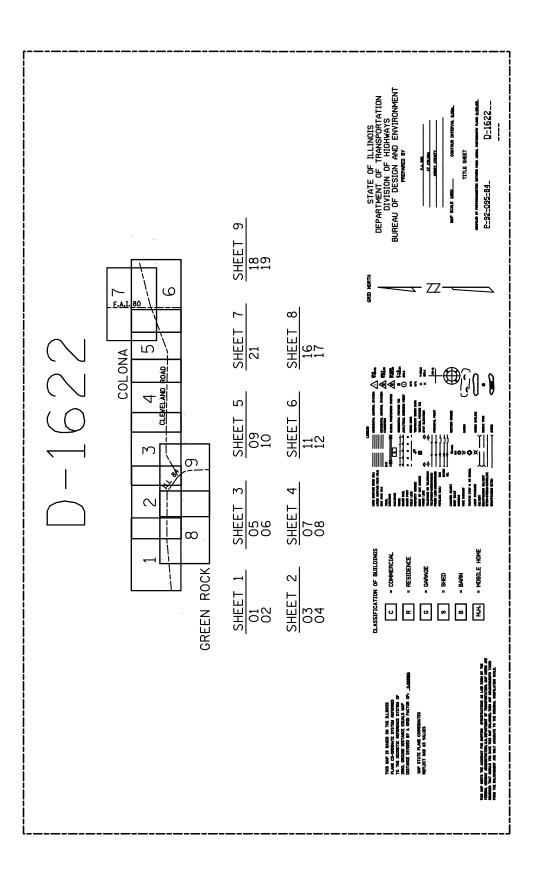
- scale of the mapping
- contour interval
- project numbers (Aerial Surveys & District)
- date of photography
- county(s) wherein the project lies
- brief geographical description of the location of the project

Title Sheet

A title sheet shall be prepared for each photogrammetric project. The sheet shall include:

- north arrow cell (c00294)
- grid factor note with horizontal and vertical notes cell (c00301 for NAD 83 or c00293 for NAD 27)
- graphical relationship of mapping sheets to each other and/or stereo models to each other

TITLE SHEET



- listing of mapping sheets with corresponding alpha-numeric CADD Design File identification for each stereoscopic model
- sketch of centerline and major crossroads
- legend of symbols cell (c00391)
- building classification cell (c00309)
- title block cell (c00290)
- project number (Aerial Surveys)
- statement about the compilation method
- disclaimer note cell (c00312)

See Exhibit C for example of legend, title block, and building classifications.

Finished Maps Digital Format

All digital files containing map data will be delivered on storage media as required in the Computer Aided Drafting Electronic Data Transfer Standards. The files with the following extensions will be on this media: .3d, .pln, and .asc. See page 27. A file with the layout of the models will be included. All photo enlargements containing identified cultural data, a control sketch and adjusted ground control data shall be included in a hard copy format.

Hard Copy Format

When a hard copy of the mapping is required, it shall be prepared on a double matte polyester film base of 100 microns (4 mils) thickness with a maximum width of 1.067 m and a maximum length of 1.422 m. All map details shall be plotted in a reverse reading format (data plotted on back side of polyester film). Each polyester film sheet shall be numbered in sequence and contain a north arrow and a title block. Labels were indicating sheet matches shall be included. A hard copy of a title sheet shall be included.

Digital Orthophoto Map Preparation

Orthophoto maps shall be prepared by using rectified digital imagery of the aerial photography. The digital imagery shall be coordinated with the same coordinate system used for the line mapping. All files of the digital orthophotos shall be compatible with the IDOT's MicroStation CADD system to allow the DTM files and generated contour files to be directly merged with the digital imagery to produce an orthophoto map.

Features such as road names, cities, rivers, creeks and streams are to be labeled.

A selection of contour colors shall be one that will have the most contrast with the predominant tone of the orthophoto when making hard copies. Hard copies shall be plotted on a stable polyester film with a minimum thickness of 100 microns (4 mils).

The final orthophoto map shall not contain any mismatched imagery that interfere with the interpretability of ground features or that are esthetically objectionable. Mismatches exceeding 1 mm are generally unacceptable and may be cause for rejection. Other defects that could cause rejection include out-of-focus imagery and inconsistencies in tone and density between individual orthophotos and/or adjacent map sheets.

Ditial Orthophoto Preparation

Digital orthophotos shall be prepared according to the IDOT document entitled "ILLINOIS DEPARTMENT OF TRANSPORTATION - SPECIFICATIONS FOR DIGITAL IMAGERY PRODUCTS."

Title Blocks

Each orthophoto map sheet shall contain the following title information:

- scale of mapping & contour interval
- project numbers (Aerial Surveys & District)
- sheet number
- project county(s)
- brief geographical description of project location
- compilation method
- photography date
- preparing agency
- North Arrow

See Exhibit C.

Accuracy

All dimensions and measurements are applicable as specified by NationalMapping Standards (NMS) in "Specifications for Aerial surveys and Mapping by Photogrammetric Methods for Highways," U. S. Department of Transportation, Federal Highway Administration, (rev.1986). The following sections restate their specifications.

Horizontal

Ninety (90) percent of all planimetric features shall be shown on the finished map, accurate to within 1/16th cm of their true coordinate position, as stated in NMS. None of the planimetric features shown shall vary more than 1\8th cm, from their true coordinate position, at map scale. Horizontal Control points on the map shall be plotted to an accuracy of 0.25mm of their true horizontal coordinate position.

Coordinate Grid Lines or Tics on the map shall be plotted to an accuracy of 0.25mm of their true horizontal coordinate position.

Vertical

Break lines and mass points in Digital Terrain Models (DTM's) shall be accurate to the extent that contours generated from their use will meet the vertical accuracy stated below.

Ninety (90) percent of contours appearing on a map, whether by conventional photogrammetric mapping or use of DEM / DTM's, shall be accurate within one-half (1/2) of the final map's contour interval, regarding vertical. Of the remaining ten (10) percent, none shall be in error by more than one (1) contour interval on the final map. Where conditions prevent attainment of this standard, use of a VOID shape (as defined for use in GEOPAK), or dashed contours, is recommended.

Checks of Map Accuracy

Any post-mapping checks will consist of closed traverses, using the original basic control survey markers from which to proceed. Survey accuracy will conform to that of the basic control.

EXHIBIT A.

GUIDELINES FOR USING DISTRICT STANDARDS GENERAL INFORMATION FOR PLOTTERS AND EDITORS

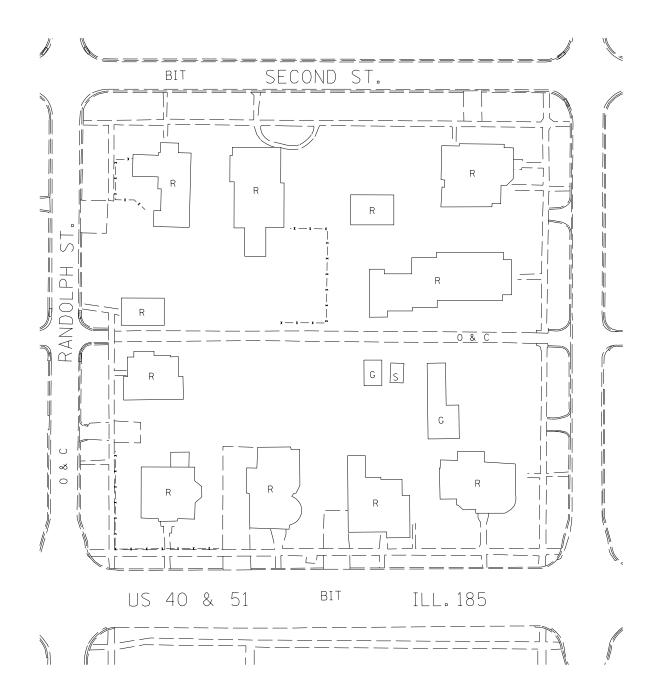
- I. OPENINGS and CLOSURES: (see examples on page 22)
 - A. ALL PUBLIC roads open to each other regardless of surface type
 - 1. side streets
 - 2. alleys
 - 3. frontage roads
 - B. ALL PRIVATE and COMMERCIAL entrances closed at public roads regardless of surface type
 - 1. driveways
 - 2. parking lots (public and private)
 - 3. field entrances
- II. CURBS and GUTTERS: (see examples on page 23)
 - A. Show gutter edge only when well defined and/or dimensioned, otherwise, show two parallel lines one (1) foot apart or to scale if applicable
 - 1. back line represents back of curb (level 28)
 - 2. front line represents face of curb (level 28)
 - 3. gutter line represents edge of pavement (level 27)
 - B. Where applicable, carry gutter lines across all openings
 - 1. back line represents face of curb continuation (level 28)
 - 2. front line represents edge of pavement (level 27)
- III. SIDEWALKS, ALLEYS and ENTRANCES: (see examples on page 24)
 - A. Do not break the principal edge
 - 1. if the entrance goes through the sidewalk break sidewalk
 - 2. if the sidewalk goes through the entrance break entrance
 - 3. if the alley goes through the sidewalk break sidewalk
 - 4. if the sidewalk goes through the alley break alley
 - B. Show alley edges when they can be seen or located by a dimension.

 Alleys are to be labeled only under the following conditions:
 - 1. if alley is dimensioned but cannot be located label as alley along with the dimension (example: 3.5 m ALLEY)
 - if edges cannot be interpreted and no dimensions given label as alley (example: ALLEY)

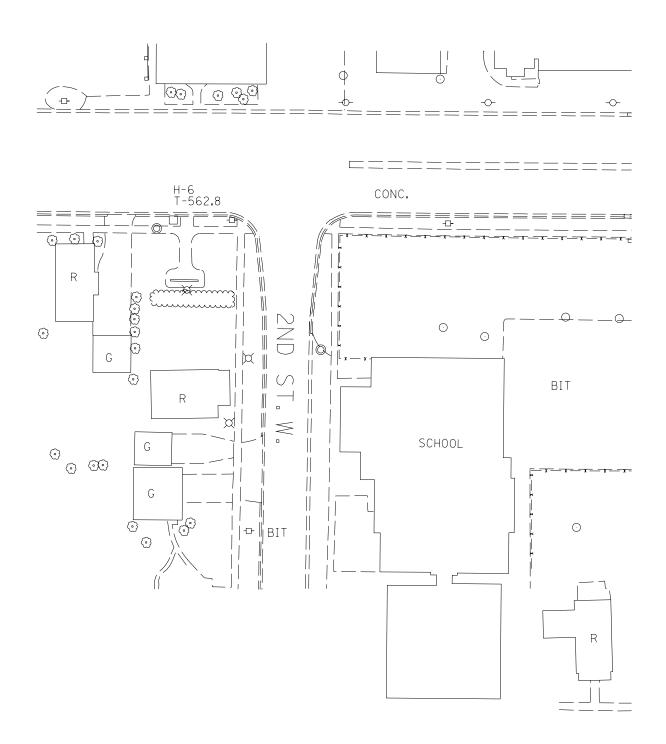
- IV. PAVEMENTS and SHOULDERS: (see examples on page 25)
 - A. Do not show unpaved shoulders
 - B. Show paved shoulders only when well defined and/or dimensioned
 - 1. if dimensioned and cannot be seen show out to out
 - C. Show all entrance edges as seen and extend to hard surface
 - 1. if shoulder is paved stop at shoulder
 - 2. if shoulder is not paved stop at pavement edge
 - 3. if radii are visible show them
 - 4. if radii are not visible use straight lines
- V. SURFACE TYPES (other than roads, alleys, etc.): (see page 26)
 - A. Identified surface types
 - 1. plot and label
 - 2. show line of delineation if visible
 - B. Unidentified surfaces with visible surface type changes
 - 1. plot
 - 2. do not label

VI. ANNOTATIONS:

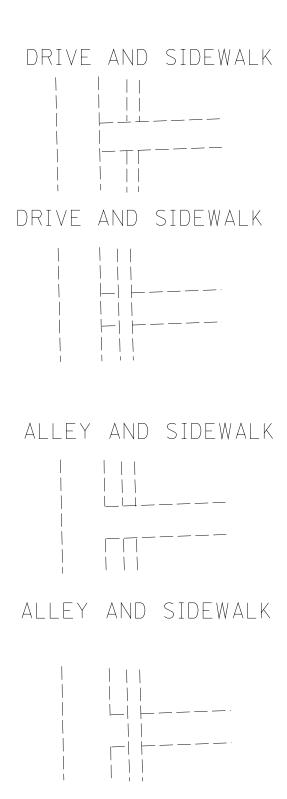
- A. Label all identified objects
 - 1. if an object can be identified label it (sign, billboard, etc.)
 - 2. if object mislabeled on photo correct and note on photo
 - 3. do not label symbolized objects (trees, power & telephone poles, etc.)
- B. Text for plan features
 - 1. place in open area if possible
 - 2. do not break contours for text
- C. Text other than plan features
 - 1. plotter will break as before
 - 2. editor will not break or move if text is legible



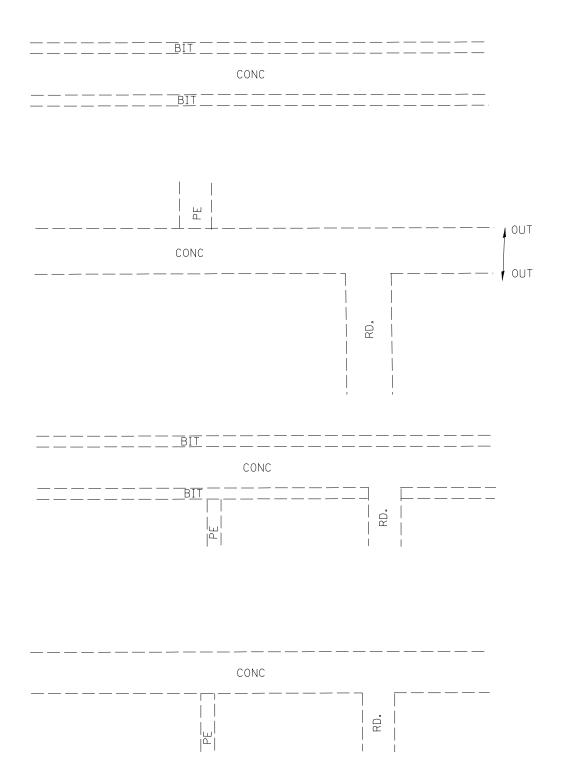
EXAMPLES OF OPENINGS AND CLOSURES



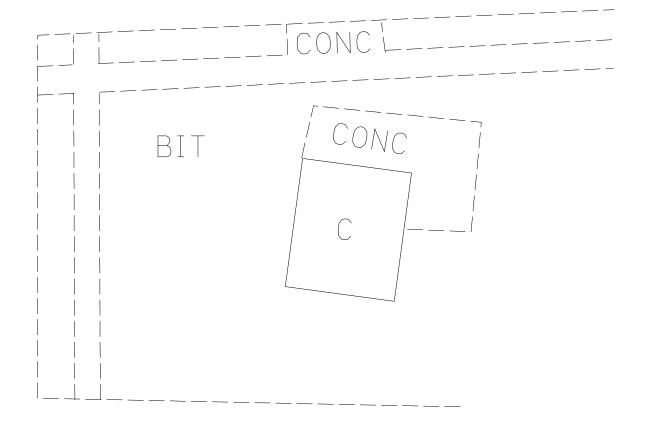
EXAMPLE OF CURBS & GUTTERS



EXAMPLES OF SIDEWALKS, ALLEYS AND ENTRANCES



EXAMPLES OF PAVEMENT AND SHOULDERS



SURFACE TYPES (OTHER THAN ROADS AND ALLEYS)

HEDGE	HEDGE CTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTTT	<u>LS</u> e0265	
LEVEL 4: VEGETATION			
ORCHARD OR NURSERY	O O O OR NURSERY! O O O OUTLINE AND	<u>CELL</u> C00170	OR LINE WT=2 LC=4
LEVEL 4: VEGETATION	POSITION ADD TEXT		
SCRUB AND VEGETATION OUTLINE (LABEL IS A CELL) LEVEL 4: VEGETATION	Contraction SCRUB	<u>LS</u> e0265	<u>CELL</u> C00264
SHRUB AND BUSHES OUTLINE	EUSHES BUSHES	_LS e0265	
LEVEL 4: VEGETATION		0511	
SINGLE TREE OR BUSH	ⓒ	<u>CELL</u> C00170	
LEVEL 4: VEGETATION			
STUMP		<u>CELL</u> C00263	
LEVEL 4: VEGETATION			
WOODS OUTLINE LEVEL 4: VEGETATION	George Control of the	<u>LS</u> e0265	
DISAPPEARING DITCH		<u>CELL</u> C00361	LINE LC=6
LEVEL 5: WATER			
FLOW ARROW LEVEL 5: WATER	ARROWHEAD SHOULD FORM A DISTINCT POINT		
INTERMITTENT POND LEVEL 5: WATER	(INTERMITTENT WATER)		LINE LC=6

MARSH OR SWAMP		CELL		LINE
	ا پيلان پيلان	CO0171		LC=3
LEVEL 5: WATER	\			
SHORELINE OF POND OR LAKE	WE			LINE LC=6
	WE 437.3			LC-0
LEVEL 5: WATER	<u> </u>			
STREAM OR DRAINAGE DITCH				LC=6
LEVEL 5: WATER				
STREAM, RIVER, OR CREEK	HORSE COS		$\frac{TEXT}{WT=1}$	LINE LC=6
	MORSE CREEK		TX=5	20 0
LEVEL 5: WATER	***************************************			
RIGHT OF WAY MARKER		CELL C00172		
	\boxtimes	C00112		
LEVEL 6: BOUNDARIES				
CANOPY	С		TEXT	
	CANOPY		W T = 1	
LEVEL 8: CULTURE	CANOT			
CEMETERY				LINE
	CEMETERY			LC=3
LEVEL 8: CULTURE				
COMMERCIAL TANK				
(PERMANENT)	TANK			
	1 AINK			
LEVEL 8:CULTURE				
CONCRETE SURFACE (SLAB, PATIO, MOBILE HOME PAD, ETC.)	CONC			LINE LC=3
LEVEL 8: CULTURE				
CONVEYOR BELT	CONVEYOR			
	CONVETOR			
LEVEL 8: CULTURE				

FENCE (ALL TYPES)		LS	
	· x — x — x — x — x — x — x — x —	e0493	
LEVEL 8: CULTURE			
FIELD LINE (APPARENT)		CELL	LINE
VALLANCINITY	_ · _ ·	C00233	LC=4
LEVEL 8: CULTURE			
FOOTBRIDGE	FB		
LEVEL 8: CULTURE			
FOUNDATIONS			LINE LC=3
	FUN 		200
LEVEL 8: CULTURE			
GOLF GREEN		<u>CELL</u> C00237	
(LABEL IS A CELL)	GOLF GREEN		
LEVEL 8: CULTURE			
HOUSE OR STRUCTURE	C =COMMERCIAL HSE =HOUSE	$\frac{TEXT}{WT=1}$	
	C G = GARAGE S = SHED B = BARN		
LEVEL 8: CULTURE	MBH =MOBILE HOME		
LEVEE		<u>CELL</u> C00111	
	ппппппппппппппппппппппппппппппппппппппп		
LEVEL 8: CULTURE			
LOCATED OBJECT OR LANDMARK	_	<u>CELL</u> C00239	
	0		
LEVEL 8: CULTURE	LABEL IF KNOWN		
MAILBOX		<u>CELL</u>	
	P	C00112	
LEVEL 8: CULTURE			
MINING AREA			LINE LC=3
	MINING AREA		~
I .		1	

		I
RACETRACK		
	RACETRACK	
LEVEL 8: CULTURE		
SAND TRAP		CELL
	SAND TRAP	C00238
(LABEL IS A CELL) LEVEL 8: CULTURE	3.113	
SIGNS	1	CELL
MISCELLANEOUS COMMERCIAL	SIGN	C00125
LEVEL 8: CULTURE	BILLBOARD	
SWIMMING POOL		CELL
	 POOL	C00234
(LABEL IS A CELL) LEVEL 8: CULTURE	<u> </u>	
WALL, MASONRY, STONE (RETAINING WALL)		
WETAINING WALL?	RET_WALL	
LEVEL 8: CULTURE		
WELL		CELL
(OIL, WATER)	OIL O WELL	C00239
	, and the second	
LEVEL 8: CULTURE		
WOODEN DECK	R DECK	
LEVEL 8: CULTURE		
SECTION CORNER	A	CELL
(APPARENT)		C00132
LEVEL 12: BOUNDARIES		
ABOVE GROUND SPLICE (TEL)(ELEC) ETC.	П	CELL
LEVEL 14: UTILITIES	[□] (TEL)	C00488
LEVEL 18: TEXT		
FIRE HYDRANT		CELL
	\forall	C00167
LEVEL 14: UTILITIES		

OUN DOLE		0511
GUY POLE	GP.	<u>CELL</u>
(LABEL IS A CELL)	GP ⊙—	C00257
LEVEL 14: UTILITIES LEVEL 18: TEXT		
HANDHOLES		CELL
		000407
LEVEL 14: UTILITIES		C00487
LIGHT STANDARD		<u>CELL_</u>
	¤	C00165
LEVEL 14: UTILITIES		
MANHOLE		CELL
(ÜTİLİTY)		C00168
	©	
LEVEL 14: UTILITIES		
PIPELINE (ABOVE GROUND)	GAS PIPELINE	
LEVEL 14: UTILITIES		
LEVEL 18: TEXT	PLOT TO SCALE	
POWER LINE		<u>CELL</u>
		C00119
LEVEL 14: UTILITIES		
POWER TRANSMISSION	PLOT TRUE POSITION	<u>CELL</u>
TOWER		C00245
LEVEL 14: UTILITIES	CONNECT BASES	
SEWAGE DISPOSAL BEDS	SEWAGE	
	DISPOSAL	
LEVEL 14: UTILITIES LEVEL 18: TEXT		
TELEPHONE OR		CELL
TELEGRAPH LINE	-00-	C00121
LEVEL 14: UTILITIES	-	
TRAFFIC SIGNAL		CELL
	ф	C00164
LEVEL 14: UTILITIES		

TRANSFORMER BOXES & VAULTS	PLOT TO SCALE		
DUXES & VAULIS	VAULT		
LEVEL 14: UTILITIES	, , , , , , , , , , , , , , , , , , ,		
LEVEL 18: TEXT	LABEL IF ANNOTATED ON PHOTO		
UTILITY	WM=WATER METER	CELL	
METERS & VALVES	WV=WATER VALVE ⊙ GM=GAS METER	C00357	
LEVEL 14: UTILITIES	O GM=GAS METER WM GV=GAS VALVE		
LEVEL 18: TEXT			
UTILITY WARNING SIGN		CELL	
(TEL) (GAS) ETC.	, (GAS)	C00356	
LEVEL AA LITILITIES	(GAS)		
LEVEL 14: UTILITIES LEVEL 18: TEXT			
ENTRANCES			LINE LC=3
	——————————————————————————————————————	L	LC-J
LEVEL 16: TEXT	PE PRIVATE CE = COMMERCIAL FE = FIELD		
LEVEL 25: MIN PVMT ED	FE = FIELD		
SURFACES, SUCH AS SIDEWALKS, DRIVEWAYS,	p <i>=======</i>		_INE_
PARKING LOTS	HT CONC	L	LC=3
LEVEL 16: TEXT	BIT CONC		
LEVEL 25: MIN PVMT ED	11		
TRAIL		L	_INE
		Ī	_C=3
LEVEL 25: MINOR PAVT			
EDGE			
BROKEN CONTOURS			
(BROKEN DUE TO INDEX	=-655		
CONTOURS BEING 1/4" OR LESS APART)	 650		
LEVEL 26: CONTOURS			
		ナ レンナー・	TNIE
INDEX CONTOUR			_INE VT=3
	650	CO=0	, 1 - 3
LEVEL 26, CONTOURS		FT=23	
LEVEL 26: CONTOURS			
INTERMEDIATE CONTOUR		_	_INE
		C	0=19
LEVEL 26: CONTOURS			
-	•		

SINK OR DEPRESSION WITH TOP INSIDE LEVEL 26: CONTOURS	649.5 649.5	PATTERN C00277 INTERMEDIATE C00278 INDEX C00280 DASHED INTM. C00281 DASHED INDEX
AIRFIELD LEVEL 16: TEXT LEVEL 27: MAJ PVMT ED	AIRFIELD	TEXT WT=1 LINE LC=3 * TEXT SIZE VARIES
ROADS & ALLEYS LEVEL 16: TEXT LEVEL 27: MAJ PVMT ED	IL37	TEXT WT=1 TX=5
ROADS WITH CURB & GUTTER LEVEL 27: MAJ PVMT ED LEVEL 28: OTHER PVMT ITEMS	28 28 27 27 27 28 PLOT TO SCALE FROM MENU	LINE LC=3
GUARDPOST LEVEL 28: OTHER PVMT ITEMS		<u>CELL</u> C00216
GUARDRAIL LEVEL 28: OTHER PVMT ITEMS		<u>LS</u> e0107
OVERHEAD SIGN LEVEL 16: TEXT LEVEL 28: OTHER PVMT ITEMS	OVERHEAD SIGN PLOT TO SCALE	
ROADS WITH CURBING LEVEL 16: TEXT LEVEL 28: OTHER PVMT ITEMS	======================================	LINE LC=3
RUMBLE STRIP LEVEL 16: TEXT LEVEL 28: OTHER PVMT ITEMS	RUMBLE STRIP	LINE_ LC=3
SMALL SINGLE POST TRAFFIC SIGN LEVEL 28: OTHER PVMT ITEMS	——————————————————————————————————————	<u>CELL</u> C00179

ANALYTICAL AERIAL TRIANGULATION POINT	\Diamond	<u>CELL</u> C00206
LEVEL 30: CONTROL		
HORIZONTAL CONTROL STATION		CELL
(TARGETED) (FIELD)	9301 T-541.78	C00202
LEVEL 30: CONTROL	1-341.10	
NGS HORIZONTAL CONTROL STATION (TARGETED) (FIELD)	NGS GARFIELD ELEV 674.15	<u>CELL</u> C00202
LEVEL 30: CONTROL		
NGS VERTICAL CONTROL STATION (BENCH MARK)	NGS × BM R-146 ELEV 678.67	CELL C00205
LEVEL 30: CONTROL		
PRINCIPAL POINT	<u>PP</u> -5	CELL_ C00207
LEVEL 30: CONTROL	'	
TEMPORARY BENCH MARK	TBM-3 × ELEV 674.10	<u>CELL</u> C00205
LEVEL 30: CONTROL		
USGS VERTICAL CONTROL STATION (BENCH MARK)	USGS × BM-UE-807-B-1 ELEV 436.78	CELL C00205
LEVEL 30: CONTROL		
VERTICAL PICTURE TIE (FIELD)	× T-421.30	CELL C00205
LEVEL 30: CONTROL		
DTM MASS POINT		CELL
	X	C00283
LEVEL 32: POINTS		
DTM TRIANGLES		LINE
		CO=63
LEVEL 36: TRIANGLES		

BREAKWATERS				LINE
				W T = 1
LEVEL 37: DRAINAGE				
DAM, MASONRY				LINE
				WT=1
1 5 V 5 1 7 7 8 8 4 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				
LEVEL 37: DRAINAGE		0511		
DISAPPEARING CULVERT	24" CMP	<u>CELL</u> C00110		LINE LC=5
LEVEL 22: DR. NOTES	F =			
LEVEL 37: DRAINAGE				
DITCH CHECK		CELL C00163		
		00163		
LEVEL 37: DRAINAGE				
DOUBLE OR MULTIPLE CULVERTS	,2 @ 24′′ CMP	CELL	LINE	LINE
INOUTH LE COLVEINTS	2 @ 24'' CMP 	C00110	WT=0 LC=5	WT=1 LC=0
LEVEL 22: DR. NOTES LEVEL 37: DRAINAGE	PLOT HEADWALLS TO SCALE			
EXISTING CULVERT WITH HEADWALLS			LINE	LINE
WITH HEADWALLS			WT=1 LC=0	WT=0 LC=5
LEVEL 22: DR. NOTES LEVEL 37: DRAINAGE	PLOT HEADWALLS TO SCALE			
EXISTING CULVERT		CELL		LINE
	- 24 '' CMP	C00110		LC=5
LEVEL 22: DR. NOTES LEVEL 37: DRAINAGE				
INLET		CELL		
		C00169		
LEVEL 22: DR. NOTES LEVEL 37: DRAINAGE	ADD TEXT IF NECESSARY TO DISTINGUISH			
MANHOLE (DRAINAGE)		CELL		
	©	C00150		
LEVEL 37: DRAINAGE				
PASSABLE LOCKS				LINE
				W T = 1
LEVEL 37: DRAINAGE				
LLVLL JI. DINAINAGL				

PIERS		LINE WT=1
LEVEL 37: DRAINAGE		
SEAWALL		LINE
		W T = 1
LEVEL 37: DRAINAGE		
SLUICE GATE		LINE WT=1
LEVEL 37: DRAINAGE		
ABANDONED RAILROAD WITH OR WITHOUT RAILS	= = = = =	LS e0221
LEVEL 38: RAILROAD		
RAILROAD	UNION PACIFIC	LS TEXT WT=1
		60124 WI=1
LEVEL 16: TEXT LEVEL 38: RAILROAD		
RAILROAD TUNNEL		LS TEXT
	##	e0134 WT=0 TX=*
LEVEL 16: TEXT LEVEL 38: RAILROADS	RAILROAD TUNNEL	* TEXT SIZE VARIES
BRIDGE, ARCH, SUSPENSION, LARGE BOX CULVERT, ETC.	· — — — — — — — — — — — — — — — — — — —	
LEVEL 39: STRUCTURE		
DTM BREAK LINES		LINE CO=14
LEVEL 56: BREAK LINES		
VOIDS	GROUND DATA	LINE CO=2
	/ OMITTED DUE TO $`$	LS=2
LEVEL 60:	OBSTRUCTED VIEW_J	COMPLEX SHAPE WT=2

CHAPTER 4

English Photogrammetric Mapping On CADD Systems

GENERAL

hese guidelines are to be used for the preparation of all large-scale mapping of 1:1200 or larger.

COMPILATION

Mapping shall be compiled by photogrammetric methods using precision photogrammetric instruments. Unless otherwise stated, mapping standards designed for highway district use are to be used. See Exhibits A & B at the end of this chapter.

EDITING

Compilation drawings shall be prepared in such a way that maps possess clear symbol definition at the specified scale. These guidelines shall be used for the following items:

Line weights and styles Text style
Lettering placement Text size

Symbology Treatment of marginal notes

MAP CONTENTS Map Coordinates

A coordinate grid system shall be established for all mapping and be shown as follows:

- When hard copies are requested, grid ticks shall be spaced at 5 inch intervals.
- Grid values shall be shown on the mapping manuscripts and shall be placed approximately one inch from the sheet edge.
- The vertical and horizontal data shall be identified on a title sheet.

Whenever ground control surveys are **not** tied to survey monuments of the Illinois Plane Coordinate System, a system of plane coordinates, positive in value, shall be established and numbered so as to avoid any possibility of this arbitrarily established system being mistaken for the existing State system.

Unless otherwise specified, all ground control surveys for the mapping shall be tied to the survey monuments of the existing State Plane Coordinate System to the North American Datum of 1983.

Planimetry

The maps shall contain all planimetric features, which are visible or identifiable on, or are interpretable from, the aerial photography including land use features such as:

buildings canals ditches reservoirs trails levees railroads ferry slips quarries cemeteries borrow pits orchards wooded areas individual large trees culverts bridges trestles tunnels piers retaining walls dams power plants storage tanks (oil, water, etc.) airfields transportation terminals curb & gutter sidewalks driveways hydrants manholes telephone lines telegraph lines paved ditches

roads (highways)

transformer & other substations

electric power transmission lines, poles & towers.

A field survey crew shall annotate features on photos that are not interpretable from the aerial photography. (See Exhibit D).

Buildings and similar dimensioned objects shall be correctly outlined and oriented, and shall be to actual size, except that dimensions smaller than 1/10 inch at map scale shall be symbolized by 1/10 inch in size. Minor irregularities in building outlines not represented by 1/20 inch at map scale shall be ignored.

The principal point of each photograph used in making the maps shall be shown on the maps.

Horizontal control stations used in making the maps shall be shown.

All mapped information shall be shown in accordance with the symbols, style, and line weights shown in Exhibit B.

Spot Elevations

Digital Terrain Mapping (DTM) does not require spot elevations.

Contours

Within accuracy requirements, contours shall be drawn to represent true elevation above mean sea level and the exact shape of the ground. Each contour shall be drawn as a solid line. Where the ground data is unreliable or cannot be seen due to heavy brush, tree cover, or other obstructions, it may be outlined with a VOID shape on level 60. The contours will be omitted in that area and the following note of explanation will be added to level 60, "GROUND DATA OMITTED DUE TO OBSTRUCTED VIEW". If you do not have this capability, the contours in such areas may be omitted or shown as dashed lines. The dashed lines shall be plotted as accurately as possible from the stereoscopic model. A note of explanation shall be added to the area.

To establish index contours, every fifth contour shall be accentuated as a heavier line than the intermediate four contours and shall be numbered according to its actual elevation above mean

sea level. Index values shall be placed every 5" at map scale.

Names & Labels

Text for control points and stand-alone objects shall be parallel to the main alignment. Labels for retaining walls, paved ditches, billboards, surface types may be parallel to the main alignment or to the object. Names for streets perpendicular to the main alignment should read from the right. Structures will be labeled parallel to the base of the structure.

DIGITAL TERRAIN MODEL DATA

The MicroStation 3D file format will be used for all map files that contain DTM data. Lines that represent breaklines will be 3D elements and symbols that represent mass points will be 2D cells. Within accuracy requirements, the vertices of the breaklines and the mass point symbols placed in the design file shall represent true elevation above mean sea level and represent the exact shape of the ground. The mass point grid spacing shall not exceed 30 feet and breaklines shall be developed to provide a true representation of the ground surface.

All DTM files will contain the following:

- standard map features (see MAP CONTENTS)
- mass points on level 32
- breaklines on level 56
- void lines on level 60
- generated contours on level 26
- a boundary polygon on level 56

Deliverables to the Department on digital CD-ROM will consist of:

- 3D file (use extension ". 3d") these files contain all mapping data.
- 2D file (use extension ". pln") these files contain planimetric features only.
- ASCII files (use extension ". asc") these files contain the DTM data in ASCII format.

Definitions

Voids are ground areas that cannot be seen by a stereoplotter operator. The cause is usually foliage, but can be structures. Void lines are not required where building "lean" obscures the ground. The "void" line can be made of any number of segments, but must be made into a MicroStation complex shape upon completion. These are used in GEOPAK as "Void" lines during data extraction. Voids can be used where the DTM applications create an incorrect interpretation of the ground. A bridge deck that begins after a cantilevered section of pavement is one instance where a void placed along the cantilevered section and around the deck solves such a problem. Void Lines also have additional specifications of line weight 2, line code 2, color 2 and a complex shape.

Boundary Polygons, sometimes referred to as Sewing Edges, surround each mapped model. They consist of segments of profile that touch on all DTM elements at the mapping limits. When completed, the segments are made into a MicroStation complex element, complex status dropped and used in GEOPAK as a "Boundary" element during data extraction. The purpose of this is to create a self-contained model, where contours stop at the map limits and can be recreated without the need for data from tie models. Boundary Polygons also have additional specifications of line weight 0, line code 2, color 14 and a complex element/dropped.

For further details on DTM, refer to the document titled "Standards for the Collection of Digital Terrain Model (DTM) Data".

DISPOSITION DIAGRAM

A disposition diagram shall be prepared for each project to show the position and relationship of all mapping sheets and/or models to each other. The diagram shall include the following:

- coordinate system used to control the project
- proper positioning of horizontal ground control
- sheet layout and the delineation of the mapping model
- principal points and photo number of each photograph
- north arrow cell (c00294)
- model/file names
- sketch of roadway
- mapping limits
- date prepared
- initials of preparer
- scale of photography
- scale of diagram
- building classification cell (c00309)
- legend of symbols cell (c00391)
- disclaimer note cell (c00312)
- grid factor note with horizontal and vertical notes cell (c00301 for NAD 83 or c00293 for NAD 27)
- arbitrary grid note cell (c00322)
- title block cell (c00290)

A title block is to be included which shall consist of the following:

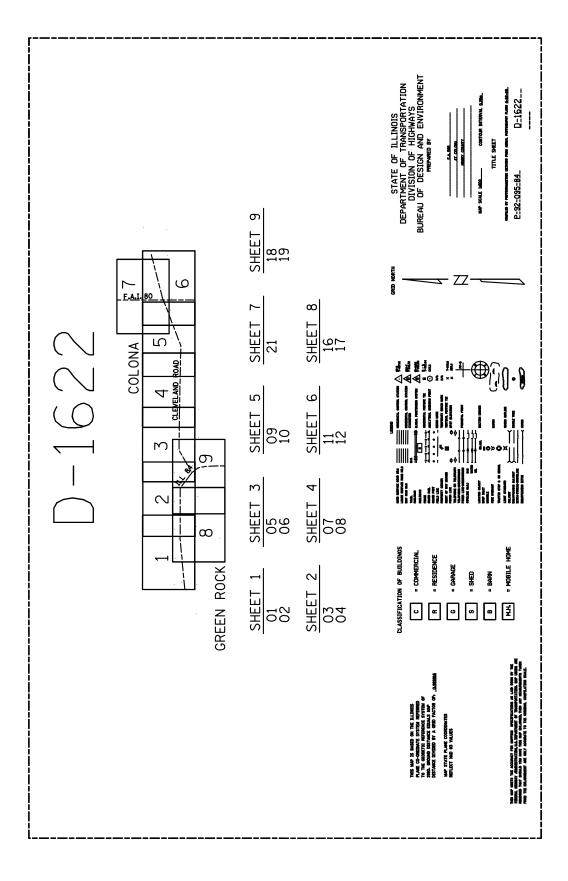
- scale of the mapping
- contour interval
- project numbers (Aerial Surveys & District)
- date of photography
- county(s) wherein the project lies
- brief geographical description of the location of the project

TITLE SHEET

A title sheet shall be prepared for each photogrammetric project. The sheet shall include:

- north arrow cell (c00294)
- grid factor note with horizontal and vertical notes cell (c00301 for NAD 83 or c00293 for NAD 27)
- graphical relationship of mapping sheets to each other and/or stereo models to each other
- listing of mapping sheets with corresponding alpha-numeric CADD Design File identification for each stereoscopic model
- sketch of centerline and major crossroads

TITLE SHEET



- legend of symbols cell (c00391)
- building classification cell (c00309)
- title block cell (c00290)
- project number (Aerial Surveys)
- statement about the compilation method
- disclaimer note cell (c00312)

See Exhibit C for example of legend, title block, and building classifications.

FINISHED MAPS

Digital Format

All digital files containing map data will be delivered on storage media as required in the Computer Aided Drafting Electronic Data Transfer Standards. The files with the following extensions will be on this media: .3d, .pln, and .asc. See page 51. A file with the layout of the models will be included. All photo enlargements containing identified cultural data, a control sketch and adjusted ground control data shall be included in a hard copy format.

Hard Copy Format

When a hard copy of the mapping is required, it shall be prepared on a double matte polyester film base of 0.004 inch thickness with a maximum width of 42 inches and a maximum length of 56 inches. All map details shall be plotted in a reverse reading format (data plotted on back side of polyester film). Each polyester film sheet shall be numbered in sequence and contain a north arrow and a title block. Labels were indicating sheet matches shall be included. A hard copy of a title sheet shall be included.

DIGITAL ORTHOPHOTO MAP PREPARATION

Orthophoto maps shall be prepared by using rectified digital imagery of the aerial photography. The digital imagery shall be coordinated with the same coordinate system used for the line mapping. All files of the digital orthophotos shall be compatible with the IDOT's MicroStation CADD system to allow the DTM files and generated contour files to be directly merged with the digital imagery to produce an orthophoto map.

Features such as road names, cities, rivers, creeks and streams are to be labeled.

A selection of contour colors shall be one that will have the most contrast with the predominant tone of the orthophoto when making hard copies. Hard copies shall be plotted on a stable polyester film with a minimum thickness of 0.004 inches.

The final orthophoto map shall not contain any mismatched imagery that interfere with the interpretability of ground features or that are esthetically objectionable. Mismatches exceeding 0.04 inch are generally unacceptable and may be cause for rejection. Other defects that could cause rejection include out-of-focus imagery and inconsistencies in tone and density between individual orthophotos and/or adjacent map sheets.

DIGITAL ORTHOPHOTO PREPARATION

Digital orthophotos shall be prepared according to the IDOT document entitled "ILLINOIS DEPARTMENT OF TRANSPORTATION - SPECIFICATIONS FOR DIGITAL IMAGERY PRODUCTS."

TITLE BLOCKS

Each orthophoto map sheet shall contain the following title information:

- scale of mapping & contour interval
- project numbers (Aerial Surveys & District)
- sheet number
- project county(s)
- brief geographical description of project location
- compilation method
- photography date
- preparing agency
- North Arrow

See Exhibit C.

ACCURACY

All dimensions and measurements are applicable as specified by National Mapping Standards (NMS) in "Specifications for Aerial surveys and Mapping by Photogrammetric Methods for Highways," U. S. Department of Transportation, Federal Highway Administration, (rev.1986). The following sections restate their specifications.

Horizontal

Ninety (90) percent of all planimetric features shall be shown on the finished map, accurate to within 1/40th of an inch of their true coordinate position, as stated in NMS. None of the planimetric features shown shall vary more than 1/20th of an inch, from their true coordinate position, at map scale. Horizontal Control points on the map shall be plotted to an accuracy of 0.01 inches of their true horizontal coordinate position.

Coordinate Grid Lines or Tics on the map shall be plotted to an accuracy of 0.01 inches of their true horizontal coordinate position.

Vertical

Break lines and mass points in Digital Terrain Models (DTM's) shall be accurate to the extent that contours generated from their use will meet the vertical accuracy stated below.

Ninety (90) percent of contours appearing on a map, whether by conventional photogrammetric mapping or use of DEM / DTM's, shall be accurate within one-half (1/2) of the final map's contour interval, regarding vertical. Of the remaining ten (10) percent, none shall be in error by more than one (1) contour interval on the final map. Where conditions prevent attainment of this standard, use of a VOID shape (as defined for use in GEOPAK), or dashed contours, is recommended.

Checks of Map Accuracy

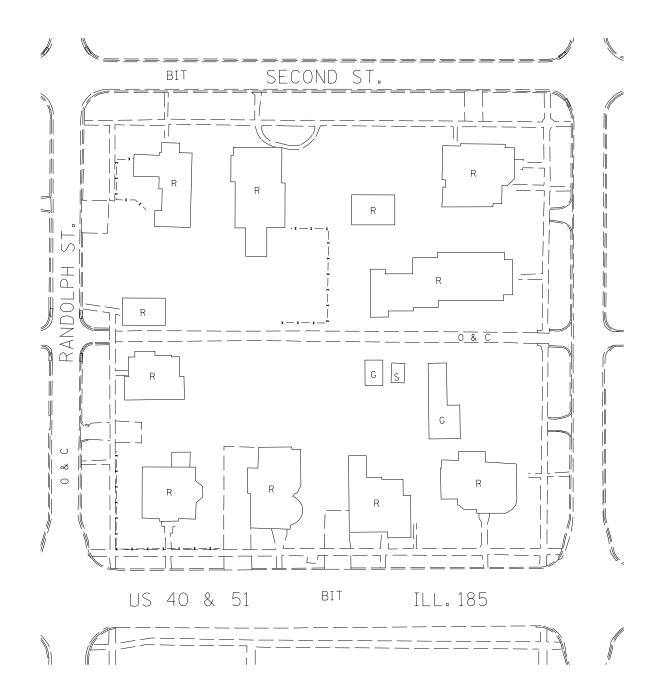
Any post-mapping checks will consist of closed traverses, using the original basic control survey markers from which to proceed. Survey accuracy will conform to that of the basic control.

EXHIBIT A.

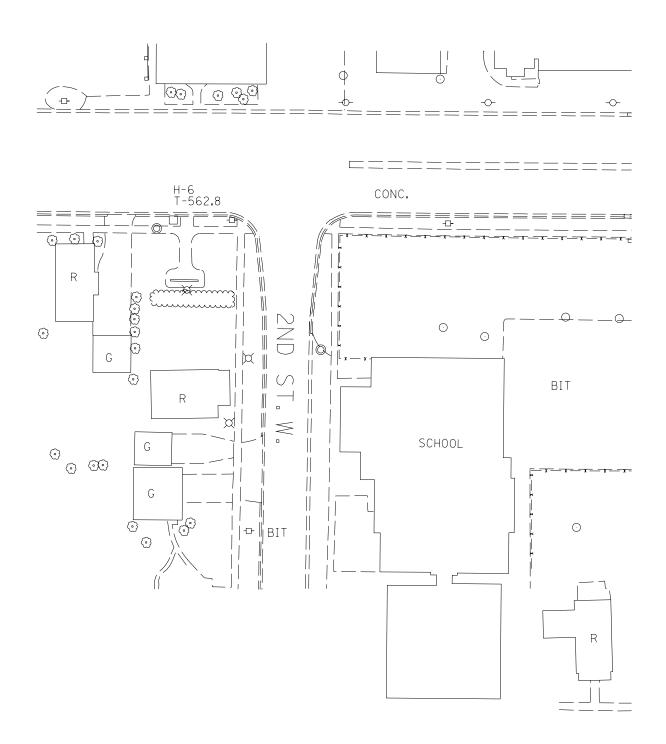
GUIDELINES FOR USING DISTRICT STANDARDS GENERAL INFORMATION FOR PLOTTERS AND EDITORS

- I. OPENINGS and CLOSURES: (see examples on page 58)
 - A. ALL PUBLIC roads open to each other regardless of surface type
 - side streets
 - 2. alleys
 - frontage roads
 - ALL PRIVATE and COMMERCIAL entrances closed at public roads regardless of surface type
 - 1. driveways
 - 2. parking lots (public and private)
 - field entrances
- II. CURBS and GUTTERS: (see examples on page 59)
 - A. Show gutter edge only when well defined and/or dimensioned, otherwise, show two parallel lines one (1) foot apart or to scale if applicable
 - 1. back line represents back of curb (level 28)
 - 2. front line represents face of curb (level 28)
 - 3. gutter line represents edge of pavement (level 27)
 - B. Where applicable, carry gutter lines across all openings
 - 1. back line represents face of curb continuation (level 28)
 - 2. front line represents edge of pavement (level 27)
- III. SIDEWALKS, ALLEYS and ENTRANCES: (see examples on page 60)
 - A. Do not break the principal edge
 - 1. if the entrance goes through the sidewalk break sidewalk
 - 2. if the sidewalk goes through the entrance break entrance
 - 3. if the alley goes through the sidewalk break sidewalk
 - 4. if the sidewalk goes through the alley break alley
 - B. Show alley edges when they can be seen or located by a dimension. Alleys are to be labeled only under the following conditions:
 - 1. if alley is dimensioned but cannot be located label as alley along with the dimension (example: 12' ALLEY)
 - if edges cannot be interpreted and no dimensions given label as alley (example: ALLEY)

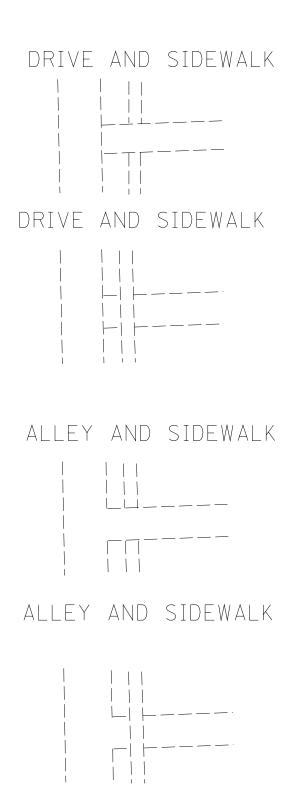
- IV. PAVEMENTS and SHOULDERS: (see examples on page 61)
 - A. Do not show unpaved shoulders
 - B. Show paved shoulders only when well defined and/or dimensioned
 - 1. if dimensioned and cannot be seen show out to out
 - C. Show all entrance edges as seen and extend to hard surface
 - 1. if shoulder is paved stop at shoulder
 - 2. if shoulder is not paved stop at pavement edge
 - 3. if radii are visible show them
 - 4. if radii are not visible use straight lines
- V. SURFACE TYPES (other than roads, alleys, etc.): (see page 62)
 - A. Identified surface types
 - 1. plot and label
 - 2. show line of delineation if visible
 - B. Unidentified surfaces with visible surface type changes
 - 1. plot
 - do not label
- VI. ANNOTATIONS:
 - A. Label all identified objects
 - 1. if an object can be identified label it (sign, billboard, etc.)
 - 2. if object mislabeled on photo correct and note on photo
 - 3. do not label symbolized objects (trees, power & telephone poles, etc.)
 - B. Text for plan features
 - 1. place in open area if possible
 - 2. do not break contours for text
 - C. Text other than plan features
 - 1. plotter will break as before
 - 2. editor will not break or move if text is legible



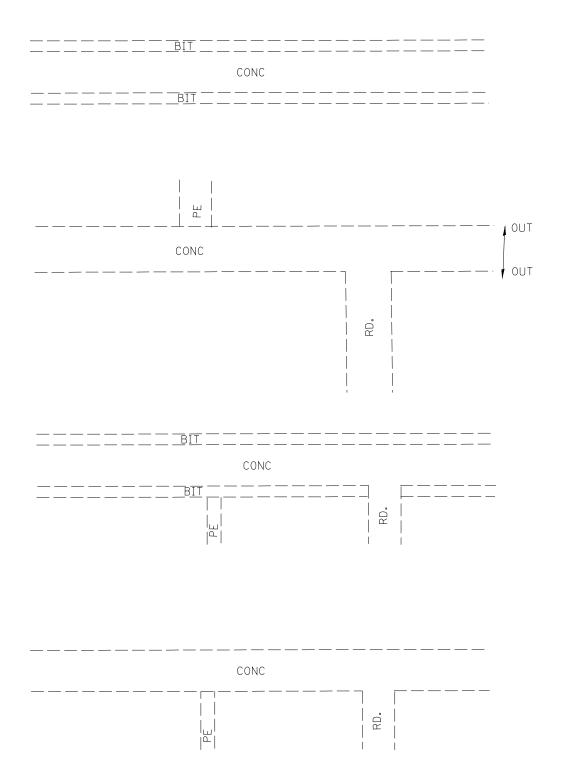
EXAMPLES OF OPENINGS AND CLOSURES



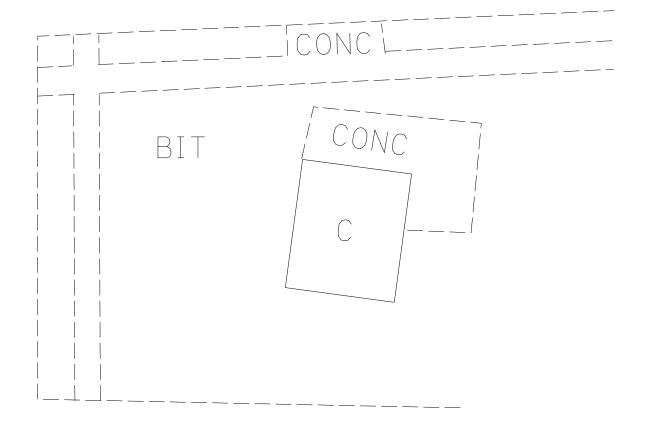
EXAMPLE OF CURBS & GUTTERS



EXAMPLES OF SIDEWALKS, ALLEYS AND ENTRANCES



EXAMPLES OF PAVEMENT AND SHOULDERS



SURFACE TYPES (OTHER THAN ROADS AND ALLEYS)

HEDGE	HEDGE C	_ <u>LS</u> e0265	
LEVEL 4: VEGETATION			
ORCHARD OR NURSERY	O O O OR NURSERY! PLOT TRUE OR OUTLINE AND	<u>CELL</u> C00170	OR LINE WT=2 LC=4
LEVEL 4: VEGETATION	POSITION ADD TEXT		
SCRUB AND VEGETATION OUTLINE (LABEL IS A CELL) LEVEL 4: VEGETATION	GORUB SCRUB	<u>LS</u> e0265	<u>CELL</u> C00264
SHRUB AND BUSHES OUTLINE	BUSHES	<u>LS</u> e0265	
LEVEL 4: VEGETATION		CELL	
SINGLE TREE OR BUSH	©	<u>CELL</u> C00170	
LEVEL 4: VEGETATION			
STUMP	風	<u>CELL</u> C00263	
LEVEL 4: VEGETATION			
WOODS OUTLINE LEVEL 4: VEGETATION	George Control of the	<u>LS</u> e0265	
DISAPPEARING DITCH		<u>CELL</u> C00361	LINE LC=6
LEVEL 5: WATER			
FLOW ARROW LEVEL 5: WATER	ARROWHEAD SHOULD FORM A DISTINCT POINT		
INTERMITTENT POND LEVEL 5: WATER	(INTERMITTENT WATER)		LINE LC=6

/	<u>CELL</u> C00171	LINE LC=3
لىنىلىد يىنلىد		
		LINE LC=6
437.3		LC-6
		LINE LC=6
		LC=6
HODOS		
CREEK	W I = 1 T X = 5	LC=6
	CELL	
	C00172	
С		_
CANDRY	W I = 1	
ovinter 1		
		LINE
CEMETERY		LC=3
TANK		
		LINE
CONC		LC=3
L — J		
CONVEYOR		
	WE 437.3 HORSE CREEK C CANOPY CEMETERY TANK	WE 437.3 HORSE CREEK TEXT WT=1 TX=5 CELL CO0172 CANOPY TANK CONC

FENCE (ALL TYPES)		_LS_
	· 1 — 1 — 1 — 1 — 1 — 1 — 1 — 1 — 1 —	e0493
LEVEL 8: CULTURE		
FIELD LINE (APPARENT)		CELL LINE
(AFF ANENT)		C00233 LC=4
LEVEL 8: CULTURE		
FOOTBRIDGE	FB	
LEVEL 8: CULTURE		
FOUNDATIONS		LINE LC=3
	FDN	
LEVEL 8: CULTURE		
GOLF GREEN		<u>CELL</u> C00237
(LABEL IS A CELL)	GOLF GREEN	
LEVEL 8: CULTURE		
HOUSE OR STRUCTURE	C =COMMERCIAL HSE =HOUSE G =GARAGE	$\frac{TEXT}{WT=1}$
	S = SHED B = BARN	
LEVEL 8: CULTURE	MBH =MOBILE HOME	
LEVEE		<u>CELL</u> C00111
	ппппппппппппппппппппппппппппппппппппппп	
LEVEL 8: CULTURE		
LOCATED OBJECT OR LANDMARK		<u>CELL</u> C00239
	0	
LEVEL 8: CULTURE	LABEL IF KNOWN	
MAILBOX	_	<u>CELL</u>
		C00112
LEVEL 8: CULTURE		
MINING AREA		LINE LC=3
	MINING AREA 	
LEVEL 8: CULTURE		

DAGETDAGK		
RACETRACK	DACETDACK	
	RACETRACK	
LEVEL 8: CULTURE		
SAND TRAP		CELL
	SAND TRAP	C00238
(LABEL IS A CELL) LEVEL 8: CULTURE		
SIGNS	SIGN	CELL
MISCELLANEOUS COMMERCIAL	F 316N	C00125
LEVEL 8: CULTURE	BILLBOARD	
SWIMMING POOL		CELL
	POOL	C00234
(LABEL IS A CELL) LEVEL 8: CULTURE		
WALL, MASONRY, STONE (RETAINING WALL)		
WELL WILLIAM	RET WALL	
LEVEL 8: CULTURE		
WELL (OIL, WATER)	OIL	<u>CELL</u> C00239
	O WELL	000239
LEVEL 8: CULTURE		
WOODEN DECK		
	R DECK	
LEVEL 8: CULTURE		
SECTION CORNER		CELL
(APPARENT)		C00132
LEVEL 10 DOUNDADIES		
LEVEL 12: BOUNDARIES		0511
ABOVE GROUND SPLICE (TEL)(ELEC) ETC.		CELL_
LEVEL 14: UTILITIES	□(TEL)	C00488
LEVEL 18: TEXT		
FIRE HYDRANT		CELL
	Ø	C00167
15/51 14-1171 1715		
LEVEL 14: UTILITIES		

GUY POLE		<u>CELL</u>
(LABEL IS A CELL)	GP ⊙—	C00244 C00257
LEVEL 14: UTILITIES LEVEL 18: TEXT		
HANDHOLES		CELL
HANDHOLES		<u>CELL</u>
LEVEL 14: UTILITIES		C00487
LIGHT STANDARD		CELL
	¤	C00165
LEVEL 14: UTILITIES		
MANHOLE		CELL
(UTILITY)		C00168
	©	
LEVEL 14: UTILITIES		
PIPELINE (ABOVE GROUND)	CAC DIDELINE	
(ADOVE GROUND)	GAS PIPELINE	
LEVEL 14: UTILITIES LEVEL 18: TEXT	PLOT TO SCALE	
POWER LINE		<u>CELL</u>
		C00119
LEVEL 14: UTILITIES		
POWER TRANSMISSION	PLOT TRUE POSITION	CELL
TOWER		C00245
LEVEL 14: UTILITIES	CONNECT BASES	
SEWAGE DISPOSAL BEDS	SEWAGE	
	DISPOSAL	
LEVEL 14: UTILITIES LEVEL 18: TEXT		
TELEPHONE OR		CELL
TELEGRAPH LINE	-000-	
	<u> </u>	C00121
LEVEL 14: UTILITIES		
TRAFFIC SIGNAL		<u>CELL</u> C00164
	Ф	
LEVEL 14: UTILITIES		

TRANSFORMER	PLOT TO SCALE			
BOXES & VAULTS	VAULT			
LEVEL 14: UTILITIES LEVEL 18: TEXT	LABEL IF ANNOTATED ON PHOTO			
UTILITY METERS & VALVES	WM=WATER METER WV=WATER VALVE ⊙ GM=GAS METER	<u>CELL</u> C00357		
LEVEL 14: UTILITIES LEVEL 18: TEXT	WM GV=GAS VĀLVĒ			
UTILITY WARNING SIGN (TEL)(GAS) ETC.	(GAS)	<u>CELL</u> C00356		
LEVEL 14: UTILITIES LEVEL 18: TEXT	P P			
ENTRANCES				LINE LC=3
LEVEL 16: TEXT LEVEL 25: MIN PVMT ED	PE = PRIVATE CE = COMMERCIAL FE = FIELD			LC-J
SURFACES, SUCH AS SIDEWALKS, DRIVEWAYS, PARKING LOTS LEVEL 16: TEXT LEVEL 25: MIN PVMT ED	PEEEEE			LINE LC=3
TRAIL				LINE LC=3
LEVEL 25: MINOR PAVT EDGE				LC-J
BROKEN CONTOURS (BROKEN DUE TO INDEX CONTOURS BEING 1/4" OR LESS APART) LEVEL 26: CONTOURS	655 ———————————————————————————————————			
INDEX CONTOUR	_		TEXT WT=1	LINE WT=3
	650		CO=0 FT=23	W 1 - 2
LEVEL 26: CONTOURS				
INTERMEDIATE CONTOUR				LINE CO=19
LEVEL 26: CONTOURS				

SINK OR DEPRESSION WITH TOP INSIDE LEVEL 26: CONTOURS	650 649.5	PATTERN C00277 INTERMEDIATE C00278 INDEX C00280 DASHED INTM. C00281 DASHED INDEX
AIRFIELD LEVEL 16: TEXT	AIRFIELD	TEXT WT=1 TX=*
LEVEL 27: MAJ PVMT ED		* TEXT SIZE VARIES
ROADS & ALLEYS LEVEL 16: TEXT	IL37	TEXT LINE WT=1 TX=5
LEVEL 27: MAJ PVMT ED	28	. 11/5
ROADS WITH CURB & GUTTER	======================================	<u>LINE</u> LC=3
LEVEL 27: MAJ PVMT ED LEVEL 28: OTHER PVMT ITEMS	PLOT TO SCALE 28 FROM MENU 28	
GUARDPOST		<u>CELL</u> C00216
LEVEL 28: OTHER PVMT ITEMS		000210
GUARDRAIL		_LS e0107
LEVEL 28: OTHER PVMT ITEMS	<u> </u>	00101
OVERHEAD SIGN	OVERHEAD SIGN	
LEVEL 16: TEXT LEVEL 28: OTHER PVMT ITEMS	PLOT TO SCALE	
ROADS WITH CURBING	======================================	LINE LC=3
LEVEL 16: TEXT LEVEL 28: OTHER PVMT ITEMS	======================================	
RUMBLE STRIP		LINE
LEVEL 16: TEXT LEVEL 28: OTHER PVMT ITEMS	RUMBLE STRIP	LC=3
SMALL SINGLE POST TRAFFIC SIGN		CELL C00179
LEVEL 28: OTHER PVMT ITEMS	— — — — — — — — — — — — — — — — — — —	

		I
ANALYTICAL AERIAL TRIANGULATION POINT	\bigcirc	CELL C00206
LEVEL 30: CONTROL		
HORIZONTAL CONTROL STATION		<u>CELL</u> C00202
(TARGETED) (FIELD)	9301 T-541.78	000202
LEVEL 30: CONTROL	3 11.10	
NGS HORIZONTAL CONTROL STATION (TARGETED) (FIELD) LEVEL 30: CONTROL	NGS GARFIELD ELEV 674.15	<u>CELL</u> C00202
NGS VERTICAL CONTROL STATION (BENCH MARK)	NGS × BM R-146 ELEV 678.67	CELL_ C00205
LEVEL 30: CONTROL		
PRINCIPAL POINT	PP-5	CELL_ C00207
LEVEL 30: CONTROL		
TEMPORARY BENCH MARK	TBM-3 × ELEV 674.10	CELL_ C00205
LEVEL 30: CONTROL		
USGS VERTICAL CONTROL STATION (BENCH MARK)	USGS X BM-UE-807-B-1 ELEV 436.78	CELL C00205
LEVEL 30: CONTROL VERTICAL		CELL
PICTURE TIE (FIELD)	× T-421.30	C00205
LEVEL 30: CONTROL		
DTM MASS POINT	×	CELL C00283
LEVEL 32: POINTS	^	
DTM TRIANGLES		LINE
LEVEL 36: TRIANGLES		CO=63

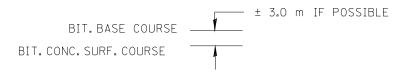
BREAKWATERS	\wedge			LINE WT=1
				17
LEVEL 37: DRAINAGE	300			
DAM, MASONRY				LINE
				W T = 1
LEVEL 37: DRAINAGE				
DISAPPEARING CULVERT		CELL		LINE
	24" CMP 	C00110		LC=5
LEVEL 22: DR. NOTES LEVEL 37: DRAINAGE				
DITCH CHECK		CELL		
		C00163		
LEVEL 37: DRAINAGE				
DOUBLE OR	0.7.04//.01/D	CELL	LINE	LINE
MULTIPLE CULVERTS	2 @ 24'' CMP 	C00110	WT=0 LC=5	WT=1 LC=0
LEVEL 22: DR. NOTES)======================================		LC-3	LC-U
LEVEL 37: DRAINAGE	PLOT HEADWALLS TO SCALE			
EXISTING CULVERT WITH HEADWALLS	24" CONC /		LINE WT=1	LINE WT=0
LEVEL 22: DR. NOTES	24" CONC -		ĽC=Ō	ĹC=5
LEVEL 37: DRAINAGE	PLOT HEADWALLS TO SCALE			
EXISTING CULVERT		CELL		LINE
	_ 24 '' CMP +	C00110		LC=5
LEVEL 22: DR. NOTES LEVEL 37: DRAINAGE				
INLET		CELL		
		C00169		
LEVEL 22: DR. NOTES LEVEL 37: DRAINAGE	ADD TEXT IF NECESSARY TO DISTINGUISH			
MANHOLE (DRAINAGE)		CELL		
(DIVATIVACE)	©	C00150		
LEVEL 37: DRAINAGE				
PASSABLE LOCKS				LINE
				WT=1
LEVEL 77 DOATNAGE				
LEVEL 37: DRAINAGE				

PIERS		LINE WT=1
LEVEL 37: DRAINAGE		
SEAWALL		LINE WT=1
LEVEL 37: DRAINAGE		
SLUICE GATE		LINE WT=1
LEVEL 37: DRAINAGE		
ABANDONED RAILROAD WITH OR WITHOUT RAILS	=====	LS e0221
LEVEL 38: RAILROAD		
RAILROAD LEVEL 16: TEXT	UNION PACIFIC	LS TEXT WT=1
LEVEL 38: RAILROAD		
RAILROAD TUNNEL		LS TEXT WT=0 TX=*
LEVEL 16: TEXT LEVEL 38: RAILROADS	RAILROAD TUNNEL	* TEXT SIZE VARIES
BRIDGE, ARCH, SUSPENSION, LARGE BOX CULVERT, ETC. LEVEL 39: STRUCTURE		
DTM BREAK LINES		LINE
DIW BREAK EINES		CO=14
LEVEL 56: BREAK LINES		
VOIDS	GROUND DATA OMITTED DUE TO OBSTRUCTED VIEW	LINE CO=2 LS=2 COMPLEX SHAPE WT=2
LLVEL OU:		COWIFLEX SHAFE

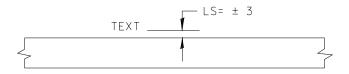
Metric Suggested Drafting Techniques

SUGGESTED TEXT PLACEMENT AND DRAFTING TECHNIQUES

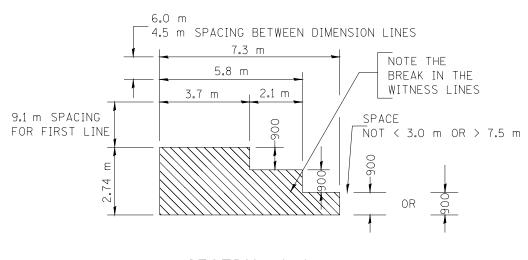
DIMENSIONS ARE BASED ON 1:500 RATIO DRAWINGS



I. LS=SPACING BETWEEN LINES OF TEXT

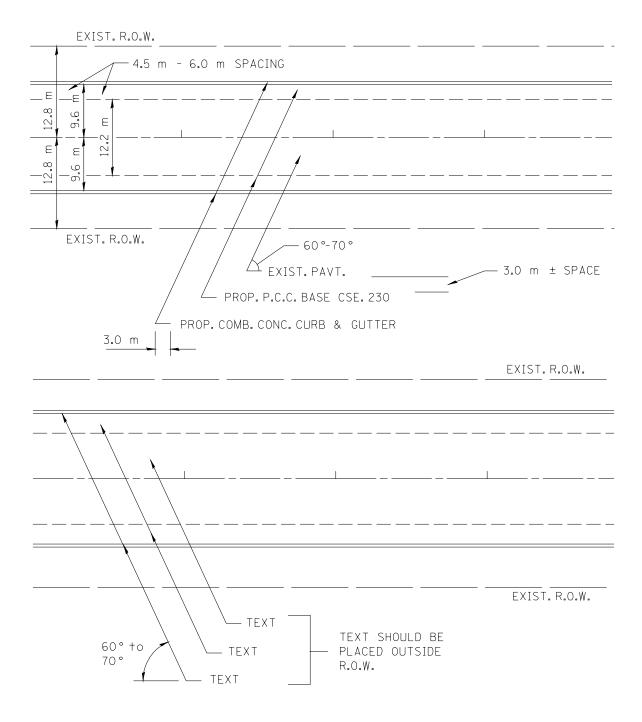


II. TEXT ABOVE LINE

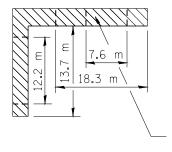


SECTION A-A

III. VARIOUS WAYS OF SHOWING DIMENSION LINES

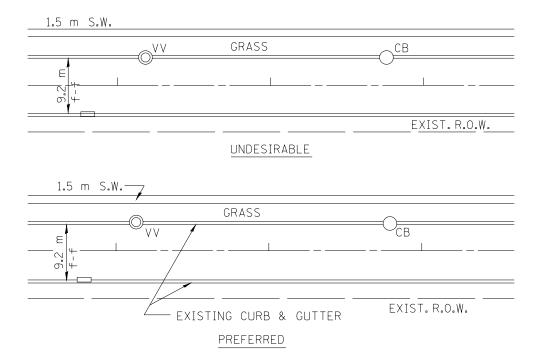


NOTE: AS MUCH AS POSSIBLE "LEADER ARROWS" SHALL BE PLACED PARALLEL TO EACH OTHER.



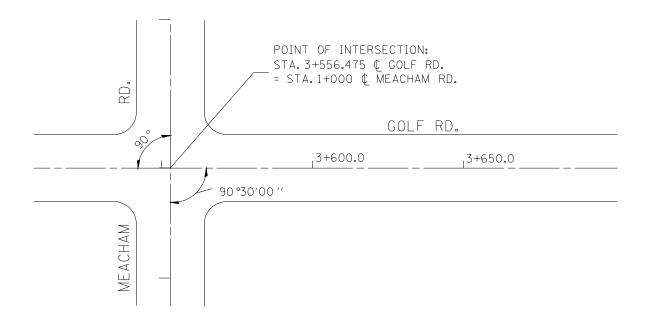
NOTE: BREAK LEADER ARROW PASSING THRU TEXT AND DIMENSION LINES. NO BREAKS WHEN IT PASSES THRU AN OBJECT.

TYPICAL LINE BREAKS WHEN WITNESS LINES DIMENSION LINES, AND LEADER ARROW CROSSES ONE ANOTHER. DON'T BREAK LEADER ARROW WHEN IT PASSES THRU ELEMENTS OR OBJECTS.

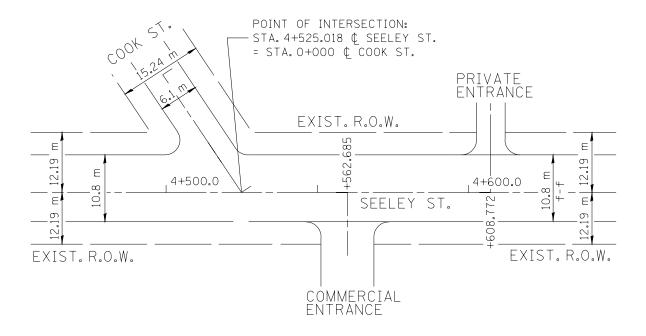


TEXT PLACEMENT WITH OBJECTS

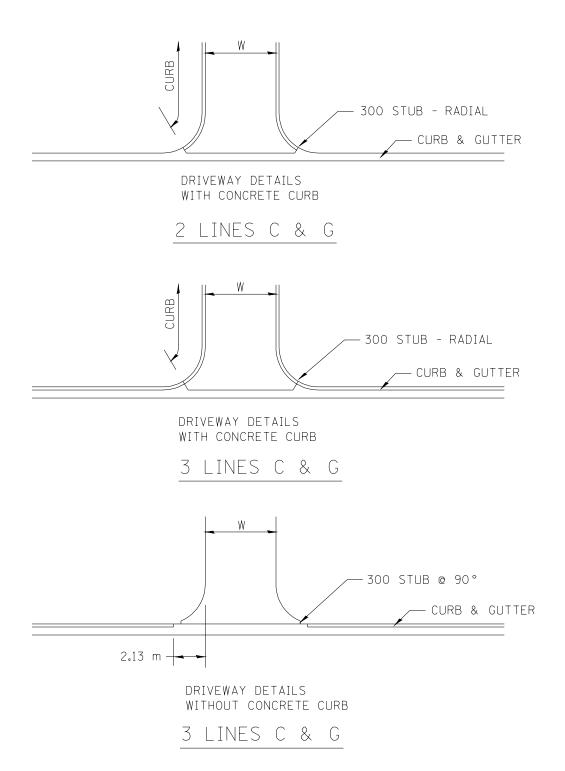
NOTE: DO NOT PLACE TEXT ON ELEMENTS OR OBJECTS

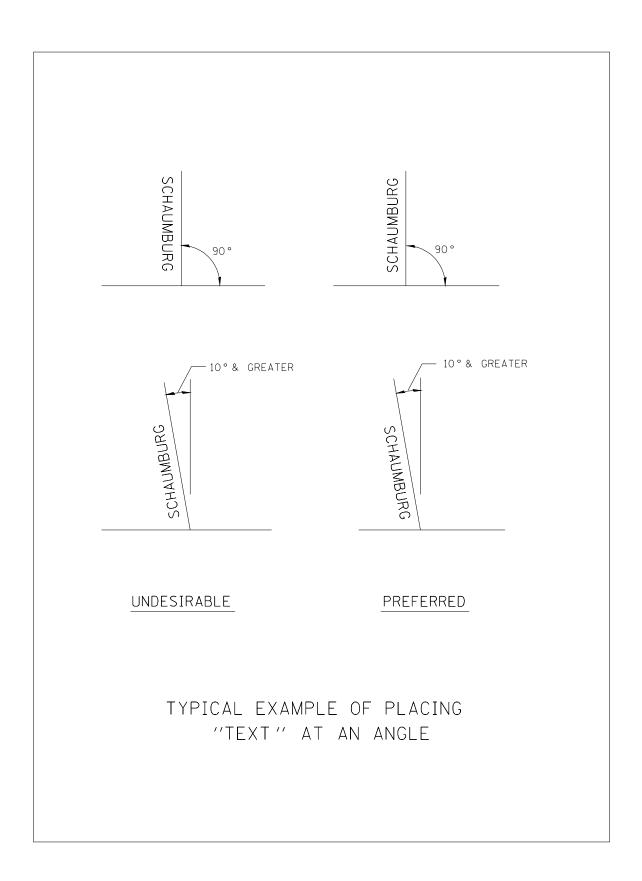


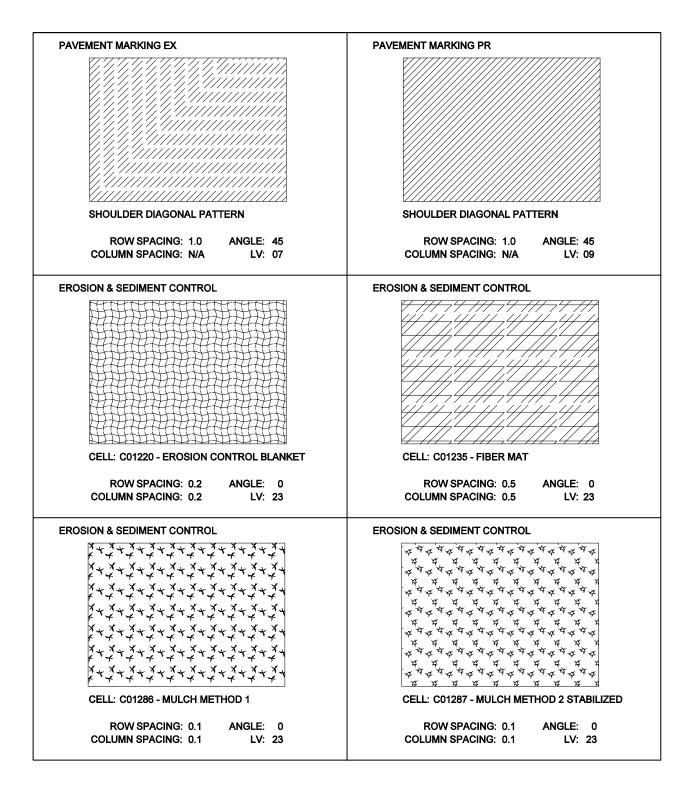
TEXT WITH MAJOR INTERSECTION OR STREETS

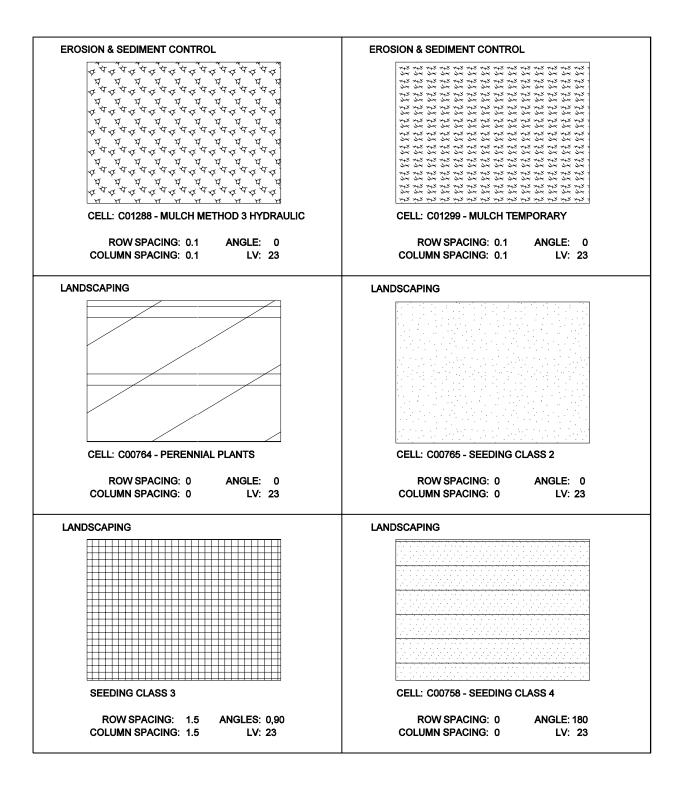


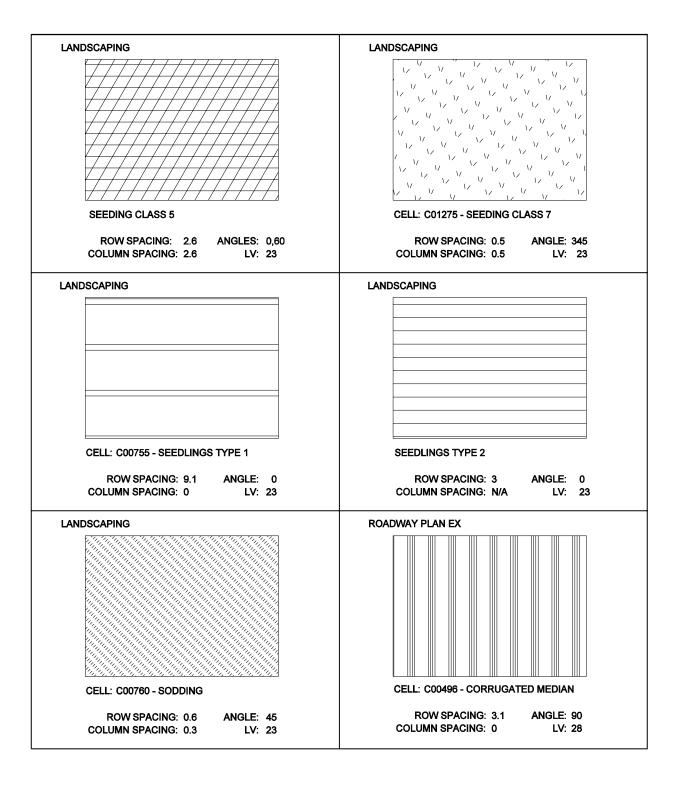
TEXT WITH SIDE STREETS AND ENTRANCES

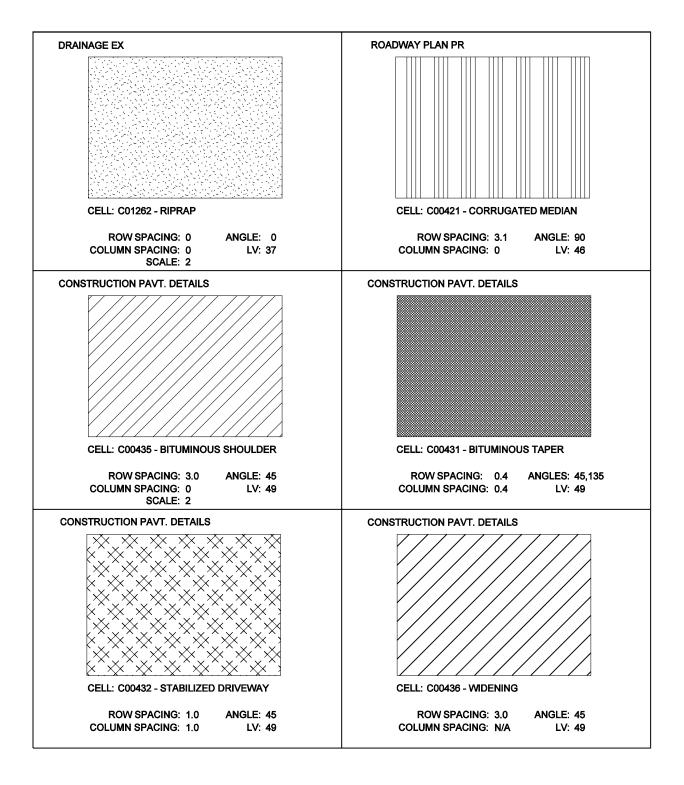


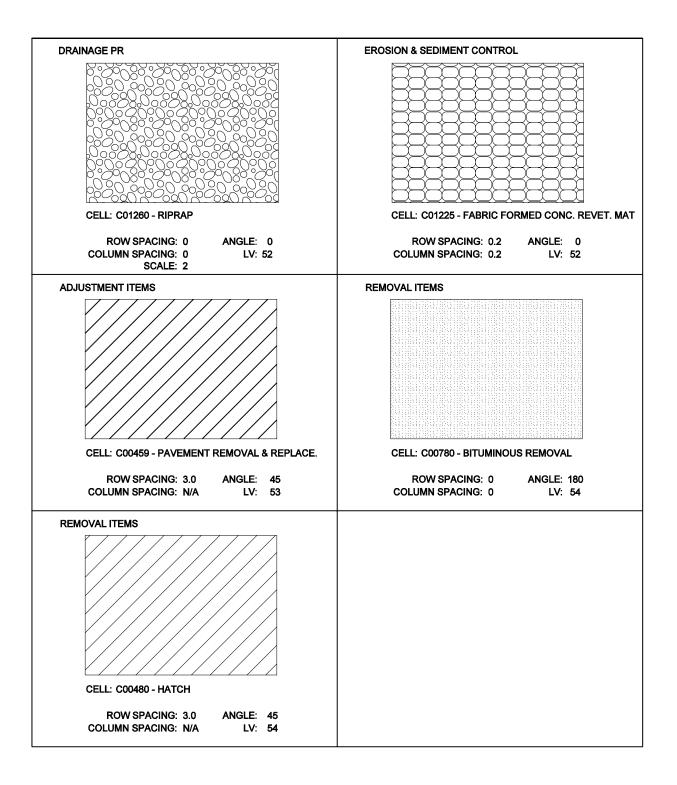








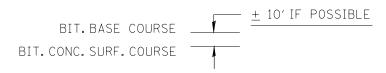




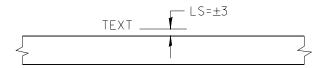
English Suggested Drafting Techniques

SUGGESTED TEXT PLACEMENT AND DRAFTING TECHNIQUES

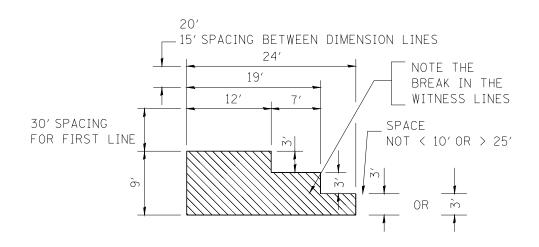
DIMENSIONS ARE BASED ON 50 SCALE DRAWING



I. LS=SPACING BETWEEN LINES OF TEXT

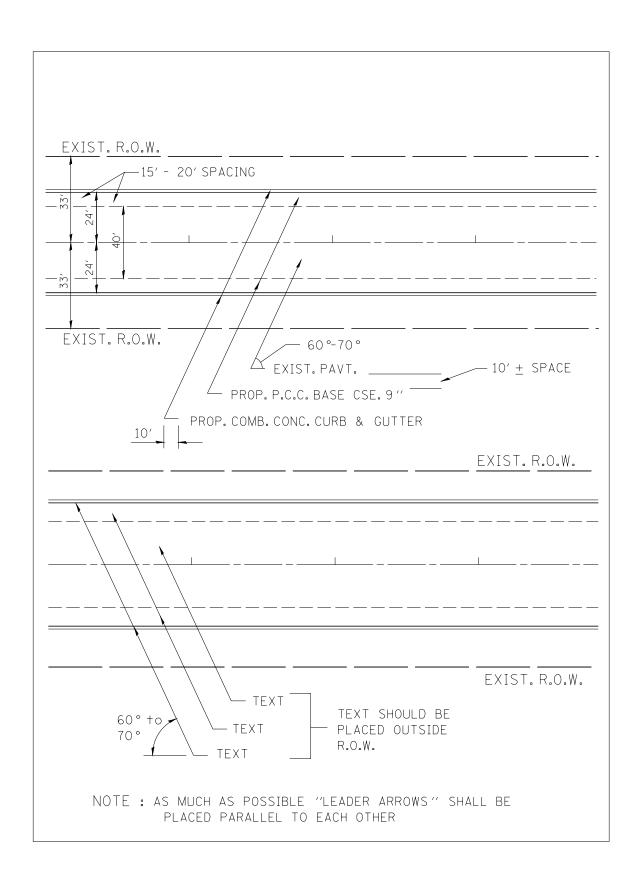


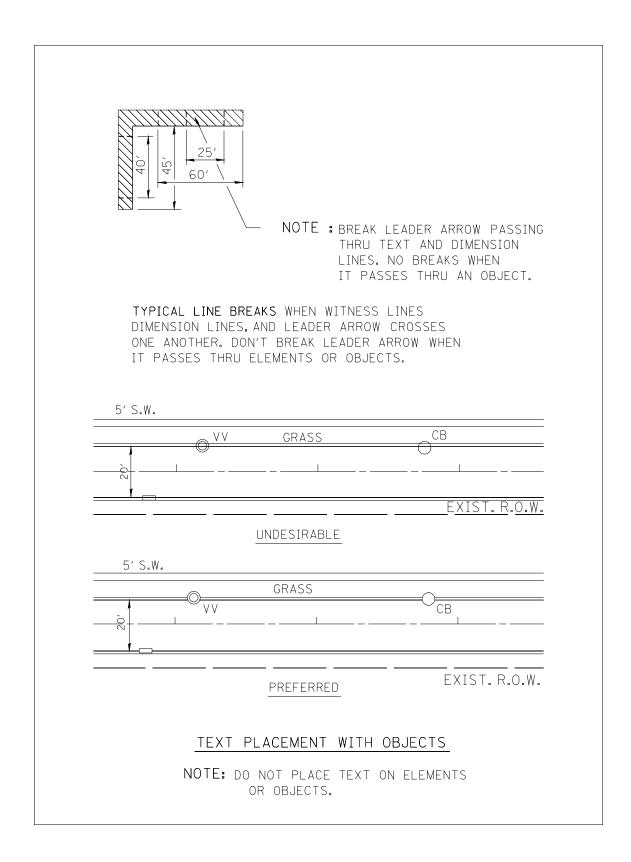
II. TEXT ABOVE LINE

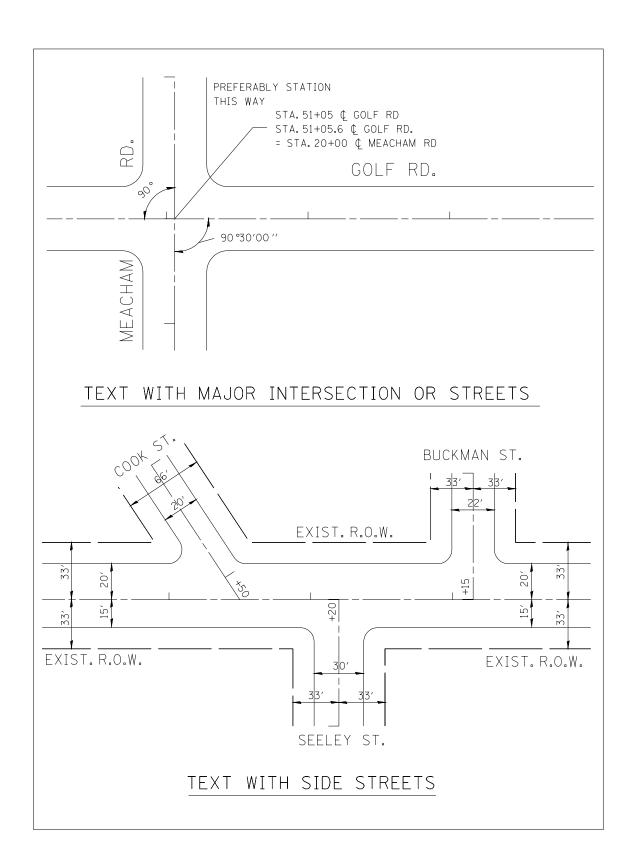


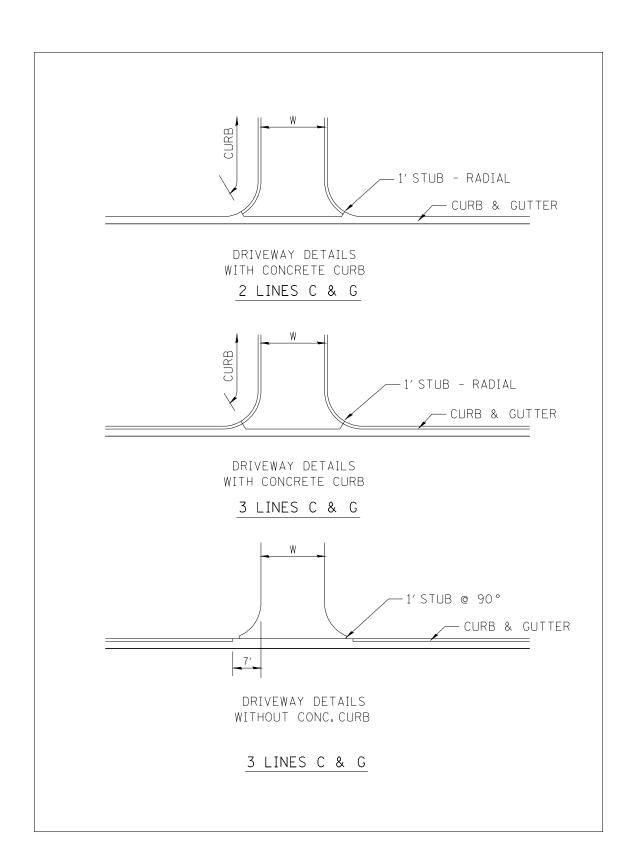
SECTION A-A

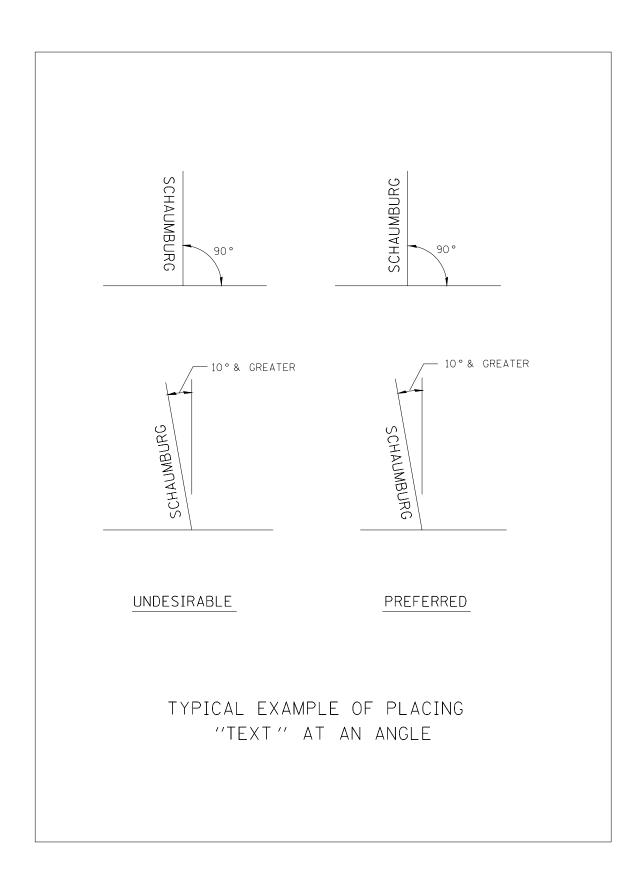
III. VARIOUS WAYS OF SHOWING DIMENSION LINES



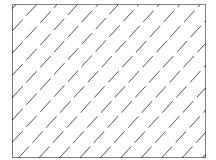








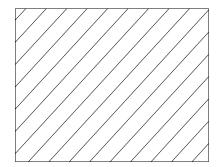
PAVEMENT MARKING EX



SHOULDER DIAGONAL PATTERN

ROW SPACING: 3.281 ANGLE: 45 COLUMN SPACING: N/A LV: 07

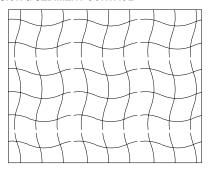
PAVEMENT MARKING PR



SHOULDER DIAGONAL PATTERN

ROW SPACING: 3.281 ANGLE: 45 COLUMN SPACING: N/A LV: 09

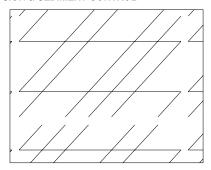
EROSION & SEDIMENT CONTROL



CELL: C01220 - EROSION CONTROL BLANKET

ROW SPACING: 0.656 ANGLE: 0 COLUMN SPACING: 0.656 LV: 23

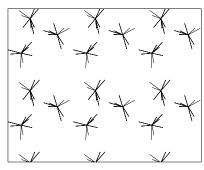
EROSION & SEDIMENT CONTROL



CELL: C01235 - FIBER MAT

ROW SPACING: 1.64 ANGLE: 0 COLUMN SPACING: 1.64 LV: 23

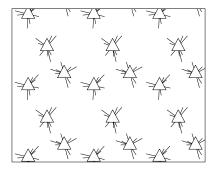
EROSION & SEDIMENT CONTROL



CELL: C01286 - MULCH METHOD 1

ROW SPACING: .328 ANGLE: 0 COLUMN SPACING: .328 LV: 23

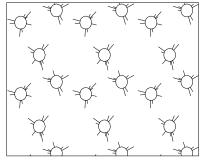
EROSION & SEDIMENT CONTROL



CELL: C01287 - MULCH METHOD 2 STABILIZED

ROW SPACING: .328 ANGLE: 0 COLUMN SPACING: .328 LV: 23

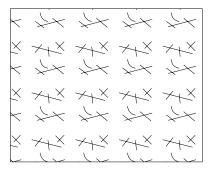
EROSION & SEDIMENT CONTROL



CELL: C01288 - MULCH METHOD 3 HYDRAULIC

ROW SPACING: 0.328 ANGLE: 0 COLUMN SPACING: 0.328 LV: 23

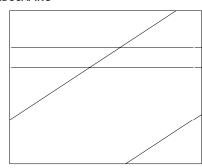
EROSION & SEDIMENT CONTROL



CELL: C01299 - MULCH TEMPORARY

ROW SPACING: 0.328 ANGLE: 0 COLUMN SPACING: 0.328 LV: 23

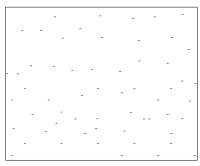
LANDSCAPING



CELL: C00764 - PERENNIAL PLANTS

ROW SPACING: 0 ANGLE: 0 COLUMN SPACING: 0 LV: 23

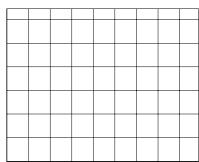
LANDSCAPING



CELL: C00765 - SEEDING CLASS 2

ROW SPACING: 0 ANGLE: 0 COLUMN SPACING: 0 LV: 23

LANDSCAPING



SEEDING CLASS 3

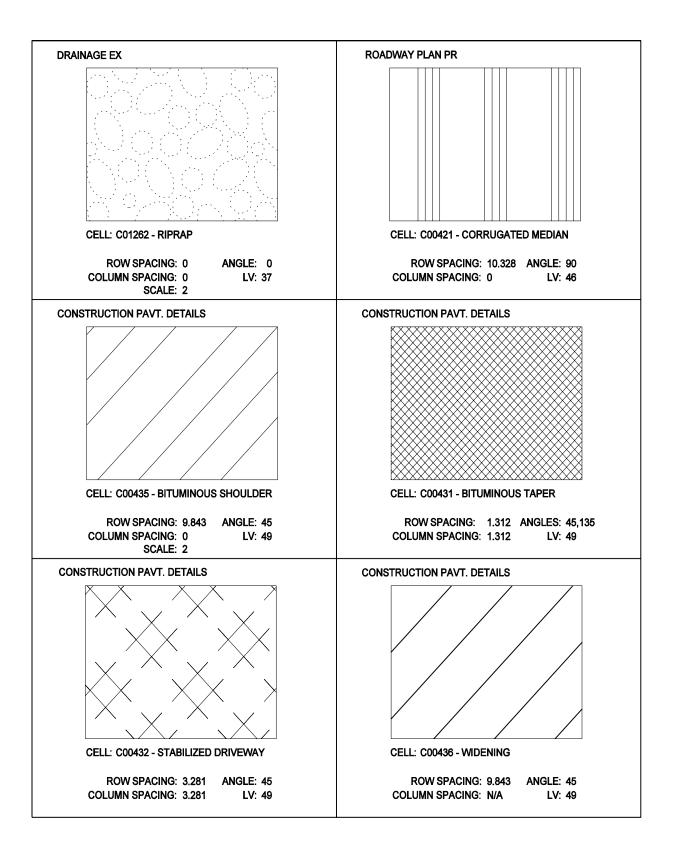
ROW SPACING: 4.921 ANGLES: 0,90 COLUMN SPACING: 4.921 LV: 23

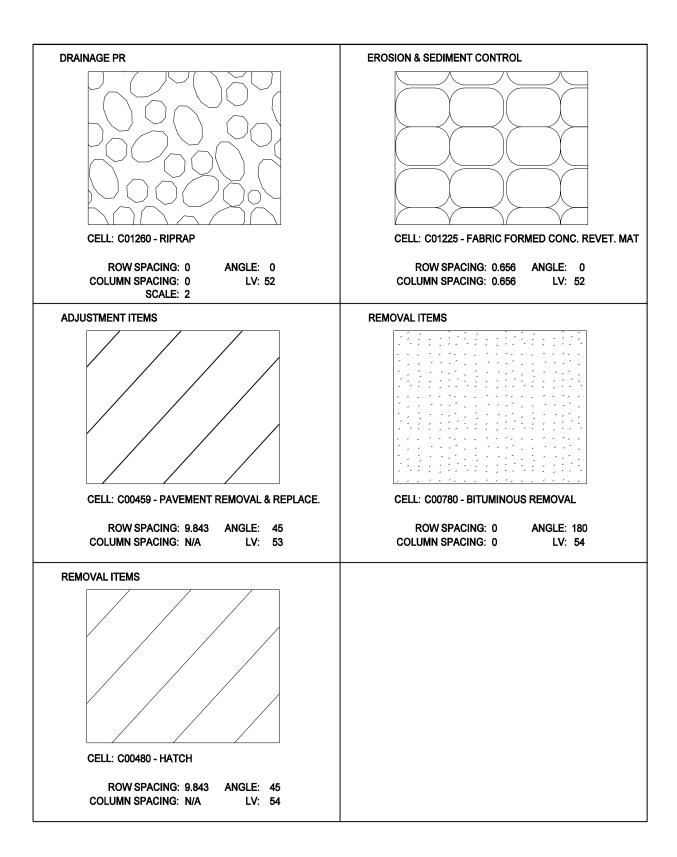
LANDSCAPING

CELL: C00758 - SEEDING CLASS 4

ROW SPACING: 0 ANGLE: 180 COLUMN SPACING: 0 LV: 23

LANDSCAPING LANDSCAPING SEEDING CLASS 5 CELL: C01275 - SEEDING CLASS 7 ROW SPACING: 8.661 ANGLES: 0,60 ROW SPACING: 1.64 ANGLE: 345 COLUMN SPACING: 1.64 LV: 23 COLUMN SPACING: 8.661 LV: 23 LANDSCAPING LANDSCAPING CELL: C00755 - SEEDLINGS TYPE 1 **SEEDLINGS TYPE 2** ROW SPACING: 29.856 ANGLE: 0 ROW SPACING: 9.843 ANGLE: 0 COLUMN SPACING: 0 LV: 23 COLUMN SPACING: N/A LV: 23 **LANDSCAPING ROADWAY PLAN EX** CELL: C00496 - CORRUGATED MEDIAN CELL: C00760 - SODDING ROW SPACING: 10.328 ANGLE: 90 ROW SPACING: 1.969 ANGLE: 45 COLUMN SPACING: 0 LV: 28 COLUMN SPACING: 0.969 LV: 23





CHAPTER 6 Level Assignments

I. CADD LEVEL ASSIGNMENTS

Level	Feature Display	Items Displayed	Corres. Level
1	Not Plotted	Reference File Frames	*
2	Alignment	Centerline, baseline, survey line, stationing, roadway name	42
3	Roadway Profile (Existing)	Profile of roadway, vertical curve data, profile elevations and notes, and plan roadway dimensioning.	43
4	Vegetation	Existing trees, brush, hedges, forests, and associated text.	23
5	Water	Existing lakes, rivers, streams, ditches, marshes, swamps, ponds and associated text.	*
6	Right of Way (Existing)	Right of way, access control fencing, right of way markers, easements, associated text.	40
7	Pavement Markings (existing)	Parking marking lines, letters and symbols, and raised pavement markers.	9
8	Non-Highway Improvements	Buildings, fences, parking lots, advertising signs, mailboxes and associated text.	*
9	Pavement Markings (Proposed)	Parking marking lines, letters and symbols, raised pavement markers and delineators.	7
10	Political Boundaries	County lines, municipal boundaries, township lines, state lines.	*
11	Traffic Signals (Existing)	Traffic signal plan to be shown on main roadway drawing and detail sheets	13
12	Private Boundaries (Existing)	Property lines, from property pins, iron pipe markers, survey markers, section corners, same ownership symbol, owners names, and property line symbol.	*
13	Traffic Signals (Proposed)	Traffic signal plan to be shown on main roadway drawing and detail sheets	11
14	Utilities (Existing)	Power poles, telephone poles, light poles, traffic signals from survey data, fire hydrants, valve vaults, sanitary sewer manholes, above ground splice box, buffalo box, handholes, control cabinets.	44
15	Highway Lighting (Existing)	Lighting for roadways, rest areas, weigh stations, navigation, aviation obstructions, signing and underpasses.	17

Level	Feature Display	Items Displayed	Corres. Level
16	Topography Notes (Existing)	Notes, labels, and object identification text.	55
17	Highway Lighting (Proposed)	Lighting for roadways, rest areas, weigh stations, navigation, aviation obstructions, signing and underpasses.	15
18	Utilities Notes (Existing)	Notes, labels and object identification of utility items.	45
19	Traffic Systems Center (Existing)	Existing Traffic Systems Center details (Dist. 1 only).	21
	Soil Borings	Soil boring details, plan and profile.	
20	Alignment Notes (Existing)	Horizontal curve data and notes, ties, benchmarks, PC & PT Stations, and Station Equations.	24
21	Erosion & Sediment Control (Temp Items)	Temp. ditch checks, erosion control fence, clearing and grading limits, dikes, temp. fence, inlet & pipe protect., perimeter erosion barrier, sediment basins.	
	Traffic Systems Center (Proposed)	Proposed Traffic Systems Center details (Dist. 1 only).	19
22	Drainage Notes (Existing)	Notes, labels, and object identification of drainage structures.	51
23	Landscaping Details (Proposed)	Roadside development plan details: Trees, hedges, seeding, mulch, sodding, mow line, contour mounding line, fiber mat, erosion control blanket.	4
24	Alignment Notes (Proposed)	Horizontal curve data and notes, ties, benchmarks, PC & PT Stations, and Station Equations.	20
25	Roadside Features (Existing)	Minor pavement, sidewalks, parking lots, private entrances, commercial entrances, parking meters.	47
26	Contours	Ground contours, proposed construction limits.	*
27	Edge of Pavement (Existing)	Existing edge of pavement for dedicated roadways (streets, roads, alleys, etc.).	29
28	Roadway Plan	Major pavement, medians, curbs, curbs and gutters, gutters, shoulders, and guardrail.	46
29	Edge of Pavement (Proposed)	Proposed edge of pavement for dedicated roadways (streets, roads, alleys, etc.).	27
30	Aerial Survey Control Points	Aerial Surveys Horizontal and Vertical Control Points, Principal Points (PPs).	*
31	Aerial Survey Legend	Aerial Survey Legend	*

Level	Feature Display	Items Displayed	Corres. Level
32	Aerial Survey Spot Elevations	Aerial Surveys Ground Spot Elevations, DTM Mass Points.	*
33	Aerial Survey Grid	State Plane Grid	*
34	Aerial Survey Map Limits ROW Dim (Existing)	Aerial Surveys Map Borders (limits) Existing ROW dimensioning.	36
35	General Details and Plan Format Sheet Cells	Detail drawings, north arrow, match lines, plan sheet, plan and profile sheet, IDS sheet, ROW plat sheet, plat of highway sheet, premise plat sheet, excess ROW plat sheet, ROW plan sheet, typical sections.	*
36	Aerial Survey Cross Section Points ROW Dim (Proposed)	Cross section points and triangles. Proposed ROW dimensioning.	34
37	Existing Drainage Plan/Profile	Catch basins, manholes, inlets, ditch checks, end sections, headwalls, pipe culverts, drainage boundary line, drainage summit symbol, ditch flow line, special ditch profile, riprap, paved ditch, aggregate ditch, sewer profile.	52
38	Railroad (Existing)	Control box, crossing gates, railroad tracks, railroad signal, overpasses, grade crossings.	48
39	Structures (Existing)	Bridges, box culverts	50
40	Right of Way (Proposed)	Right of way, access control fencing, right of way markers, easements and associated text.	6,59
41	Coordinate Data	Coordinates, north and east.	*
42	Alignment (Proposed)	Centerline, baseline, survey line, stationing, roadway name	2
43	Roadway Profile	Profile of roadway, vertical curve data, profile elevations and notes, and plan roadway dimensioning.	3
44	Utilities (Proposed)	Power poles, telephone poles, light poles, traffic signals from survey data, fire hydrants, valve vaults, sanitary sewer manholes, above ground splice box, buffalo box, handholes, control cabinets.	14
45	Utility Notes (Proposed)	Notes, labels and object identification of utility items.	18

Level	Feature Display	Items Displayed	Corres. Level
46	Roadway Plan (Proposed)	Medians, curbs, curbs and gutters, gutters, shoulders, and guardrail.	28
47	Roadside Features (Proposed)	Minor pavement, sidewalks, parking lots, private entrances, commercial entrances, parking meters.	25
48	Railroads (Proposed)	Control box, crossing gates, railroad tracks, railroad signal, overpasses, grade crossings.	38
49	Construction Signing and Detail Drawings (Proposed)	Detours, construction warning signs, detail drawings, and area patterns for miscellaneous pavements.	*
50	Structures (Proposed)	Bridges, box culverts	39
51	Drainage Notes (Proposed)	Notes, labels, and object identification of drainage structures.	22
52	Drainage Plan/Profile (Proposed) Erosion & Sediment Control	Catch basins, manholes, inlets, ditch checks, end sections, headwalls, pipe culverts, drainage boundary line, drainage summit symbol, ditch flow line, special ditch profile, sewer profile. Aggregate ditch, paved ditch, riprap and fabric formed concrete revetment mat.	37
53	Adjustment Items (Proposed)	Notations for drainage and/or utility items to be adjusted.	*
54	Removal Items (Proposed)	Hatch pattern or tic mark pattern indicating item to be removed; (i.e., Sidewalk or median removal)	*
55	Roadway Plan Notes (Proposed)	Notes, labels and object identification for proposed roadway.	16
56	Aerial Surveys	Centerlines, x-section lines, break lines and shear diagrams.	*
57	Underground Drainage & Utilities (Existing)	Existing sanitary sewer, underground pipe lines, underground cables, pipe underdrains, storm sewers.	58
58	Underground Drainage & Utilities (Proposed)	Proposed sanitary sewer, underground pipe lines, underground cables, pipe underdrains, storm sewers.	57
59	ROW Plans	Temporary easements and notes (proposed).	40
60	Unassigned	Used for Districts, GEOPAK and Aerial Surveys	*
61	Unassigned	Used for Districts, GEOPAK and Aerial Surveys	*
62	Unassigned	Used for Districts, GEOPAK and Aerial Surveys	*
63	Unassigned	Used for Districts, GEOPAK and Aerial Surveys	*

Common Cell Abbreviations

00111111011	
ABV	ABOVE
A/C	ACCESS CONTROL
AC	ACRE
ADJ	ADJUST
	AERIAL SURVEYS
AS	
AGG	AGGREGATE
AH	AHEAD
APT	APARTMENT
ASPH	ASPHALT
AGS	AUXILIARY GAS VALVE (SERVICE)
AX	AXIS OF ROTATION
BK	BACK
B-B	BACK TO BACK
BKPL	BACKPLATE
BARR	BARRICADE
BGN	BEGIN
BM	BENCHMARK
BIND	BINDER
BIT	BITUMINOUS
BTM	BOTTOM
BLVD	BOULEVARD
BRK	BRICK
BBOX	BUFFALO BOX
BLDG	BUILDING
CIP	CAST IRON PIPE
CB	CATCH BASIN
C-C	CENTER TO CENTER
CL	CENTERLINE
CL-E	CENTERLINE TO EDGE
CL-F	CENTERLINE TO FACE
CERT	CERTIFIED
CHSLD	CHISELED
CP	CLAY PIPE
CLSD	CLOSED
CLID	CLOSED LID
CS	CITY STREET
CT	COAT
COMB	COMBINATION
CE	COMMERCIAL ENTRANCE
CONC	CONCRETE
CONST	CONSTRUCT
CONTD	CONTINUED
CONT	CONTINUOUS
COR	CORNER
CORR	CORRUGATED
COINI	OUNIOUMILD

CMP	CORRUGATED METAL PIPE
CNTY	COUNTY
CH	COUNTY HIGHWAY
CSE	COURSE
XSECT	CROSS SECTION
m^3	CUBIC METER
mm ³	CUBIC MILLIMETER
CU YD	CUBIC YARD
CULV	CULVERT
C&G	CURB & GUTTER
D	DEGREE OF CURVE
DC	DEPRESSED CURB
DET	DETECTOR
DIA	DIAMETER
DIST	DISTRICT
DOM	DOMESTIC
DBL	DOUBLE
DSEL	DOWNSTREAM ELEVATION
DSFL	DOWNSTREAM FLOWLINE
DR DI	DRAINAGE DRAINAGE INLET OR DROP INLET
DRV	DRIVEWAY
DCT	DUCT
EA	EACH
EB	EASTBOUND
EOP	EDGE OF PAVEMENT
E-CL	EDGE TO CENTERLINE
E-E	EDGE TO CENTERLINE
EL	ELEVATION
ENTR	ENTRANCE
EXC	EXCAVATION
EX	EXISTING
EXPWAY	EXPRESSWAY
Е	OFFSET DISTANCE TO VERTICAL CURVE
<u>E</u>	EXTERNAL DISTANCE OF HORIZONTAL CURVE
F-F	FACE TO FACE
FA	FEDERAL AID
FAI	FEDERAL AID INTERSTATE
FAP	FEDERAL AID PRIMARY
FAS	FEDERAL AID SECONDARY
FAUS	FEDERAL AID URBAN SECONDARY
FP	FENCE POST
FE	FIELD ENTRANCE
FH 	FIRE HYDRANT
FL	FLOW LINE
FB	FOOT BRIDGE
FDN	FOUNDATION
FR	FRAME
F&G	FRAME & GRATE

FRWAY GAL GALV GM GV GRAN GR GRVL GND GUT	FREEWAY GALLON GALVANIZED GAS METER GAS VALVE GRANULAR GRATE GRAVEL GROUND GUTTER
HH HATCH	HANDHOLE HATCHING
HD	HEAD
HDW	HEADWALL
HDUTY	HEAVY DUTY
ha	HECTARE
HWY HORIZ	HIGHWAY HORIZONTAL
HSE	HOUSE
IL	ILLINOIS
IMP	IMPROVEMENT
IN DIA	INCH DIAMETER
INL	INLET
INST IDS	INSTALLATION INTERSECTION DESIGN STUDIES
INV	INVERT
IP	IRON PIPE
IR	IRON ROD
JT	JOINT
kg	KILOGRAM
km	KILOMETER
LS LN	LANDSCAPING LANE
LT	LEFT
LP	LIGHT POLE
LGT	LIGHTING
LF	LINEAL FEET OR LINEAR FEET
L	LITER OR CURVE LENGTH
LC LNG	LONG CHORD
L SUM	LONGITUDINAL LUMP SUM
MACH	MACHINE
MB	MAIL BOX
MH	MANHOLE
MATL	MATERIAL
MED	MEDIAN
M METU	METHOD
METH MBH	METHOD MOBILE HOME
ווטואו	WODILL FOWL

M MID-ORDINATE mm MILLIMETER

mm DIA MILLIMETER DIAMETER

MIX MIXTURE

MFT MOTOR FUEL TAX

MOD MODIFIED

N & BC NAIL & BOTTLE CAP

N & C
N & W
NAIL & WASHER
NB
NORTHBOUND
NE
NORTHEAST
NC
NORMAL CROWN

NOAA NATIONAL OCEANIC ATMOSPHERIC ADMINISTRATION

NW NORTHWEST
OLID OPEN LID

PAT PATTERN
PVD PAVED
PVMT PAVEMENT

PM PAVEMENT MARKING

PED PEDESTAL PNT POINT

PC POINT OF CURVATURE

PI POINT OF INTERSECTION OF HORIZONTAL CURVE

PRC POINT OF REVERSE CURVATURE

PT POINT OF TANGENCY
POT POINT ON TANGENT
POLYETH POLYETHYLENE

PCC PORTLAND CEMENT CONCRETE
PP POWER POLE OR PRINCIPAL POINT

PRM PRIME

PE PRIVATE ENTRANCE PROF PROFILE GRADELINE

PROJ PROJECT

P.C. PROPERTY CORNER

PL PROPERTY LINE
PR PROPOSED
R RADIUS
RR RAILROAD

RC REMOVE CROWN

RPS REFERENCE POINT STAKE

RRS RAILROAD SPIKE REF REFLECTIVE

RCCP REINFORCED CONCRETE CULVERT PIPE

REINF REINFORCEMENT

RET RETAINING
REM REMOVAL
REP REPLACEMENT
REST RESTAURANT
RESURF RESURFACING

SM SOLID MEDIAN SB SOUTHBOUND SE SOUTHEAST SW SOUTHWEST	RT ROW RD RDWY RTE SAN SANS SEC SEED SHAP SH SHLD SW SIG SOD	RIGHT RIGHT-OF-WAY ROAD ROADWAY ROUTE SANITARY SANITARY SEWER SECTION SEEDING SHAPING SHEET SHOULDER SIDEWALK SIGNAL SODDING
SE SOUTHEAST		
		SOUTHBOUND
SW SOUTHWEST		SOUTHEAST
SPL SPECIAL DITOLL		
SD SPECIAL DITCH SQ FT SQUARE FEET		
m ² SQUARE METER		
mm ² SQUARE MILLIMETER	mm ²	
SQ YD SQUARE YARD		
STB STABILIZED		
STD STANDARD	STD	STANDARD
SBI STATE BOND ISSUE		STATE BOND ISSUE
SM STATE OF ILLINOIS SURVEY MARKER		
SR STATE ROUTE		
STA STATION		
SPBGR STEEL PLATE BEAM GUARDRAIL		
SS STORM SEWER STY STORY		
ST STREET		
STR STRUCTURE		
e SUPERELEVATION RATE		
S.E. RUN. SUPERELEVATION RUNOFF LENGTH		
SURF SURFACE	SURF	SURFACE
SMK SURVEY MARKER		
T TANGENT DISTANCE		
T.R. TANGENT RUNOUT DISTANCE		
TEL TELEPHONE		
TB TELEPHONE BOX TP TELEPHONE POLE		
TEMPORARY		
TBM TEMPORARY BENCH MARK		
TD TILE DRAIN		
TBE TO BE EXTENDED		

TBR TO BE REMOVED
TBS TO BE SAVED
TWP TOWNSHIP

TR TOWNSHIP ROAD TS TRAFFIC SIGNAL

TSCB TRAFFIC SIGNAL CONTROL BOX
TSC TRAFFIC SYSTEMS CENTER

TRVS TRANSVERSE

TRVL TRAVEL
TRN TURN
TY TYPE
T-A TYPE A

UNDGND UNDERGROUND

USGS U.S. GEOLOGICAL SURVEY USEL UPSTREAM ELEVATION

USFL UPSTREAM FLOWLINE

UTIL UTILITY
VBOX VALVE BOX
VV VALVE VAULT
VLT VAULT
VEH VEHICLE

VEH VEHICLE
VP VENT PIPE
VERT VERTICAL

VC VERTICAL CURVE

VPC VERTICAL POINT OF CURVATURE
VPI VERTICAL POINT OF INTERSECTION
VPT VERTICAL POINT OF TANGENCY

WM WATER MAIN
WV WATER VALVE
WMAIN WATERMAIN
WB WESTBOUND
WILDFL WILDFLOWERS

W WITH WO WITHOUT

Alphabetic Index To Cell Library

Note:

Cells with a TSC prefix are to be used for Traffic Systems Center jobs only. Cells with an AS prefix are to be used for Aerial Surveys work. Cells are sized to be displayed with 1:600 plots assuming an active scale of one. Exceptions to this are noted with the cells. Cells display level = color except when noted otherwise (generally utilities).

NAME	DESCRIPTION
C00125	ADVERTISING SIGN
C00439	AGG SHOULDER PATTERN
C00115	ALI PI INDICATOR EX
C00408	ALI PI INDICATOR PR
C00175	ALI POINT INDICATOR EX
C00199	ALI POINT INDICATOR PR
C00145	ARROW FILLED
C00391	AS DIST MAPING GENRL LEGEND
C00345	AS GRID TICK
C00201	AS HORIZ CONTROL STATION
C00202	AS HORIZ CONTROL TARGET
C00203	AS HORIZ PICTURE TIE
C00294	AS NORTH ARROW
C00322	AS NOTE BRIDGE
C00309	AS NOTE BUILDING CLASS
C00312	AS NOTE DISCLAIMER
C00293	AS NOTE NAD 27 GRID
C00301	AS NOTE NAD 83 GRID
C00292	AS NOTE NAVD 88
C00291	AS NOTE NGVD 29
C00207	AS PRINCIPAL POINT
C00295	AS SCALE BAR
C00303	AS SHEET INDEX LEFT
C00302	AS SHEET INDEX RIGHT
C00313	AS SHEET INDEX VERTICAL

AS SPOT EL SYMBOL C00283 C00383 AS TEST X C00290 AS TITLE BOX 9 9 94 C00245 AS UTIL TRANSMISSION TOWER C00204 AS VERTICAL CONTROL STATION AS VERTICAL PICTURE TIE C00205 C00273 AS WATER POINT C00427 BARRICADE TYPE II BARRICADES TYPE 1 OR 2 DIA C00426 C00430 BARRICADES TYPE III C00425 BARRICADES W EDGE LINE C00780 BIT REMOVAL AREA C00435 BIT SHOULDER AREA PAT BIT TAPER PATTERN C00431 BURIED CABLE FIB OPT PAT EX C01006 C01007 BURIED CABLE FIB OPT PAT PR C00683 BURIED CABLE PAT 1 PR C00687 BURIED CABLE PAT 1 PR BURIED CABLE TV PAT EX C01008 BURIED CABLE TV PAT PR C01009 C00445 CATCH BASIN PR C00718 CBL IN DCT W GND 1 EX C00722 CBL IN DCT W GND 1 EX CBL IN DCT W GND 1 EX C00726 C00677 CBL IN DCT W GND 1 PR CBL IN DCT WO GND 1 EX C00730 C00751 CBL IN DCT WO GND 1 PR C00554 CENTERLINE BREAK CIRCLE PR C00555 CENTERLINE STATION TICK PR C00486 CL NO TIC PAT EX CL PATTERN PR C00492 C00934 CONDUIT EX C00673 CONDUIT PR C00496 CORR MED AREA PAT EX C00421 CORR MED AREA PAT PR C00239 CULTURE POINT **CULVERT END SECTION** C00143 C00476 CULVERT END SECTION PR C00127 DASHED PROPERTY LINE **DECIDUOUS TREE EX** C00170 C00648 DETOUR AHD W20 2 C01004 DETOUR M4 10L 0 C00638 DETOUR M4 10R 0 C00422 DIRECTION OF TRAFFIC C00361 DISAPPEARING DITCH

C00163	DITCH CHECK EX
C00458	DITCH CHECK PR
C01215	DITCH CHECK TEMPORARY
C00471	DOMESTIC SRVC BOX ADJ
C00131	DR PROF WTR SURF INDIC
C00102	DRAINAGE CATCH BASIN
C00798	DRAINAGE FLOW LINE EX
C00799	DRAINAGE FLOW LINE PR
C00150	DRAINAGE MANHOLE EX
C00194	DRAINAGE MANHOLE PR
C00432	DRIVEWAY STABILIZED PAT PR
C00776	EARTHWORKS BALANCE PNT
C00777	EARTHWORKS BGN END PNT
C00778	EASEMENT EX
C00401 C00553	EASEMENT PR
C00553 C00551	ELEC UNDGND PAT PR ELECTRIC UNDGND PAT EX
C00551 C00118	EOP PNT INDICATOR EX
C00118	EOP PNT INDICATOR PR
C01220	EROSION CONTROL BLANKET
C00105	EVERGREEN TREE EX
C01225	FAB. FRMD. CONC. MAT
C00493	FENCE PATTERN EX
C01235	FIBER MAT
C00233	FIELD LINE SYMBOL
C00167	FIRE HYDRANT EX
C00441	FIRE HYDRANT PR
C00428	FLASHING LIGHT
C00460	FRAME AND GRATE ADJUST
C00461	FRAME AND LID ADJUST GAS PIPE UNDGND PAT EX
C00558 C00561	GAS PIPE UNDGND PAT EX GAS PIPE UNDGND PAT PR
C00301 C01102	GRAPHIC SCALE DUAL
C00107	GUARDRAIL PAT EX
C00420	GUARDRAIL PAT PR
C00216	GUARDRAIL POST EX
C00110	HEADWALL EX
C00477	HEADWALL PR
C00103	HORIZ CURVE DATA EX
C00485	HORIZ CURVE DATA PR
C01240	INLET AND PIPE PROTECTION
C00169	INLET EX
C00443	INLET PR
C00138	IRON PIPE FOUND

IRON PIPE SET

C00109

C00464 C00468 C00469 C00643 C00649 C00650	ITEM TO BE ABANDONED ITEM TO BE MOVED ITEM TO BE RELOCATED KEEP LEFT R47AL KEEP LEFT R47BL KEEP RIGHT R47 AR KEEP RIGHT R47BR
C00440 C00437	KEYED LONG JT PATTERN KEYED LONG JT W TIE PAT
C00392	LABEL FLAG POLE
C00237 C00256	LABEL GOLF GREEN LABEL PIPELINE WARNING
C00257	LABEL PIPELINE WARNING
C00285	LABEL ROW
C00238 C00264	LABEL SAND TRAP LABEL SCRUB
C00234	LABEL SWIMMING POOL
C00640 C00639	LARGE ARROW ONE WAY W1 6 0 LARGE ARROW TWO WAY W1 7 0
C00596	LEGEND LANDSCAPING
C00668	LEGEND LGT WIRE DIA PR
C00617 C00616	LEGEND TS EX LEGEND TS PR
C00111	LEVEE OR NOISE BARRIER
C00634	LFT LN CLSD AHD W20 5L
C00641 C00692	LFT TRN LANE R3 L100 LGT COMB MAST ARM EX
C00692 C00671	LGT COMB MAST ARM EX
C00572	LGT CONTROLLER EX
C00190	LGT CONTROLLER PR
C00621	LGT ELECTRICAL GND EX
C00622	LGT ELECTRICAL GND PR
C00710 C00670	LGT FOUND A OR C EX LGT FOUND A OR C PR
C00070 C00174	LGT HANDHOLE EX
C00182	LGT HANDHOLE PR
C00568	LGT HDUTY HANDHOLE EX
C00183	LGT HDUTY HANDHOLE PR
C00184 C00703	LGT HDUTY HANDHOLE PR LGT HIGH MAST POLE 1 EX
C00656	LGT HIGH MAST POLE 1 PR
C00704	LGT HIGH MAST POLE 2 EX
C00657	LGT HIGH MAST POLE 2 PR
C00705	LGT HIGH MAST POLE 3 EX
C00658	LGT HIGH MAST POLE 3 PR

```
LGT HIGH MAST POLE 4 EX
C00706
C00659
          LGT HIGH MAST POLE 4 PR
C00707
          LGT HIGH MAST POLE 5 EX
C00660
          LGT HIGH MAST POLE 5 PR
C00708
          LGT HIGH MAST POLE 6 EX
          LGT HIGH MAST POLE 6 PR
C00661
          LGT JUNCTION BOX EX
C00565
C00196
          LGT JUNCTION BOX PR
          LGT LIGHT UNIT 1 EX
C00693
C00662
          LGT LIGHT UNIT 1 PR
          LGT LIGHT UNIT 2 EX
C00694
C00663
          LGT LIGHT UNIT 2 PR
C00695
          LGT LIGHT UNIT 3 EX
           LGT LIGHT UNIT 3 PR
C00664
C00696
          LGT LIGHT UNIT 4 EX
C00665
          LGT LIGHT UNIT 4 PR
C00697
          LGT LIGHT UNIT 5 EX
C00666
          LGT LIGHT UNIT 5 PR
          LGT LIGHT UNIT TWIN 1 EX
C00698
          LGT LIGHT UNIT TWIN 1 PR
C00651
C00699
          LGT LIGHT UNIT TWIN 2 EX
C00652
          LGT LIGHT UNIT TWIN 2 PR
C00700
          LGT LIGHT UNIT TWIN 3 EX
          LGT LIGHT UNIT TWIN 3 PR
C00653
C00701
          LGT LIGHT UNIT TWIN 4 EX
C00654
          LGT LIGHT UNIT TWIN 4 PR
C00702
          LGT LIGHT UNIT TWIN 5 EX
C00655
          LGT LIGHT UNIT TWIN 5 PR
C00178
          LGT POWER POLE EX
C00187
          LGT POWER POLE PR
          LGT PULL POINT EX
C00577
C00618
          LGT PULL POINT PR
C00623
          LGT THAF FLOW ARROW EX
C00581
          LGT TRAF FLOW ARROW PR
C00709
          LGT UNDERPASS LUMINAIRE EX
C00669
           LGT UNDERPASS LUMINAIRE PR
C00762
          LS DECIDUOUS TREE
C00761
          LS EVERGREEN TREE
C00756
           LS HATCHING PATTERN
C00757
          LS HATCHING PATTERN
C00767
          LS INTER TREE EX
C00594
          LS INTERMEDIATE TREE
C00763
          LS MOWLINE PATTERN
C00764
           LS PERENNIAL PLANTS PAT
C00765
          LS SEED CL2 PAT
```

000750	LC CEEDING OL 4 DAT
C00758	LS SEEDING CL4 PAT
C00755	LS SEEDLING TYPE 1 PAT
C00766	LS SHADE TREE EX
C00593	LS SHADE TREECODE A
C00595	LS SHRUBS CODE C OR D
C00760	LS SOD PATTERN
C00112	MAIL BOX
C00224	MAJOR ROADS POINT EX
C00171	MARSH
C01286	MULCH M1
C01287	MULCH M2 STAB
C01288	MULCH M3 HYDRO
C01299	MULCH TEMPORARY
C00645	NO LEFT TURN R3 2
C00646	NO RIGHT TURN R3 1
C00146	NORTH ARROW DIST 1
C00151	NORTH ARROW DIST 2
C00152	NORTH ARROW DIST 3
C00153	NORTH ARROW DIST 4
C00154	NORTH ARROW DIST 5
C00155	NORTH ARROW DIST 6
C00156	NORTH ARROW DIST 7
C00157	NORTH ARROW DIST 8
C00158	NORTH ARROW DIST 9
C00219	NOTE GROUND DATA OMITTE
C00559	OIL PIPE UNDGND PAT EX
C00562	OIL PIPE UNDGND PAT PR
C01005	ONE WAY R6 1L
C00637	ONE WAY R6 1R
C00223	OTHER PVMT ITEM POINT EX
C00423	PANELS 1
C00424	PANELS 2
C00459	PAVT REM ADJ
C00497	PIPE UNDERDRAIN EX
C00448	PIPE UNDERDRAIN PR
C00910	PM DBL CENTERLINE PAT EX
C00911	PM DBL CENTERLINE PAT PR
C00906	PM DOTTED LINES PAT EX
C00907	PM DOTTED LINES PAT PR
C00768	PM MARKR AMBR 1 W PR
C00739	PM MARKR AMBR 2 W PR
C00771	PM MARKR CRSTL 1 W PR
C00584	PM RAISED MARKING 1 EX
C00585	PM RAISED MARKING 2 EX
C00586	PM RAISED MARKING 3 EX

C00769 C00587 C00770 C00588 C00589 C00772	PM RAISED MARKING 3 PR PM RAISED MARKING 4 EX PM RAISED MARKING 4 PR PM RAISED MARKING 5 EX PM RAISED MARKING 6 EX PM RAISED MARKING 6 PR
C00603 C00602	PM RR CROSSING EX PM RR CROSSING PR
C01202	PM RUR COMB LT TRN ONLY PR
C01211	PM RUR COMB RT ONLY EX
C01212	PM RUR COMB RT TRN ONLY PR
C01291	PM RUR LT TRN ARROW EX
C01292	PM RUR LT TRN ARROW PR
C00790	PM RUR LT TRN ONLY EX
C00792	PM RUR LT TRN ONLY PR
C01295	PM RUR RT TRN ARROW EX
C01296	PM RUR RT TRN ARROW PR
C00794 C00796	PM RUR RT TRN ONLY EX PM RUR RT TRN ONLY PR
C00796	PM RUR THRU ONLY EX
C01241	PM RUR THRU ONLY PR
C00738	PM SH DIAG PAT PR
C00773	PM SH DIAGONAL PAT EX
C00904	PM SKIP DASH LN PAT EX
C00905	PM SKIP DASH LN PAT PR
C00908	PM SKIP DASH WHITE PR
C00909	PM SKIP DASH YELLOW PR
C00912	PM STOP LINE PAT EX
C00913	PM STOP LINE PAT PR
C00601	PM URB COMB LT ONLY EX
C01201 C00600	PM URB COMB LT ONLY EX PM URB COMB LT ONLY PR
C00000 C01002	PM URB COMB ET ONLY EX
C01002	PM URB COMB RT TRN ONLY PR
C00791	PM URB LT TRN ARROW EX
C00793	PM URB LT TRN ARROW PR
C00578	PM URB LT TRN ONLY EX
C00597	PM URB LT TRN ONLY PR
C00590	PM URB LT TURN ONLY PR
C00795	PM URB RT TRN ARROW EX
C00797	PM URB RT TRN ARROW PR
C00579	PM URB RT TRN ONLY EX
C00598	PM URB RT TRN ONLY PR
C00741	PM URB THRU ONLY EX
C00740	PM URB THRU ONLY PR

_	
C00580	PM URB TWO WAY LT TRN EX
C00599	PM URB TWO WAY LT TRN PR
C00147	PROF PI INDICATOR EX
C00483	PROF PI INDICATOR PR
C00149	PROF PNT INDICATOR EX
C00482	PROF PNT INDICATOR PR
C00287	PROPERTY CORNER EX
C00288	PROPERTY LINE SYMBOL
C00133	QUARTER CORNER OFFSET NW
C00130	QUARTER CORNER OFFSET SE
C00631	RD CONST AHD W20 1 0
C00104	RDWY DITCH FLOW EX
C00478	RDWY DITCH FLOW PR
C00480	REMOVAL HATCHING PAT
C00447	REMOVAL ITEM TIC PAT
C00447 C00629	REVERSE LEFT W1 4L
	_
C00628	REVERSE RIGHT W1 4R
C01260	RIPRAP
C01262	RIPRAP EX
C00636	ROAD CLOSED R11 2
C00632	ROAD CLSD AHD W20 1 0
C00647	ROAD CLSD TO TRAF R11 4
C00101	ROW CORNER MONUMENT EX
C00140	ROW CORNER MONUMENT PR
C00400	ROW DIST 1 PR
C00172	ROW MARKER EX
C01105	ROW PARCEL TABLE
C00136	ROW PATTERN
	_
C01101	ROW SURV CERT
C00221	RR ABANDONED PATTERN
C01013	RR CANT MAST ARM EX
C01014	RR CANT MAST ARM PR
C00491	RR CONTROL BOX EX
C00192	RR CONTROL BOX PR
C01103	RR CROSSBUCK EX
C01104	RR CROSSBUCK PR
C00494	RR CROSSING GATE EX
C00418	RR CROSSING GATE PR
C00495	RR FLASHING SIGNAL EX
C00433	RR FLASHING SIGNAL PR
C00333	RR POINT
C00134	RR TRACK PAT EX
C00457	RR TRACK PAT PR
C00633	RT LN CLSD AHD W20 R0
C00122	SAME OWNERSHIP SYMBOL

C00137 C00932 C00433 C00935 C00132 C01265 C01275 C01270 XSHEET C00135 C00124 C00129 C00116 C00403 C00117 C00404 C00406 C00429 C00635 C00280 C00277 C00278 C00278 C00278 C00278 C00281 C00453 C00642 C01003 C01010 C00933	SANITARY SEWER EX SANITARY SEWER PR SAW LONG JTW TIE PAT SECT GRANT LN PAT SECTION CORNER SYMBOL SEDIMENT BASIN SEEDING CL7 SEEDING PERMANENT SHEET 5 SCALE 091599 SHEET COVER ENG 12 99 SHEET IDS A 20 SHEET IDS A 20 SHEET IDS D1 9 94 SHEET PLAN 09 15 99 SHEET PLAT HWAYS D1 SHEET PLAT HWAYS D1 SHEET ROW 09 15 99 SHEET ROW PLANS 09 15 99 SHEET ROW PLANS 09 15 99 SIGN FLAG SINGLE LANE AHD SINKHOLE PAT BROKEN SINKHOLE PAT INDEX SINK
C01010	STORM SEWER PAT EX
C00933 C00465	
C00465 C00466	STRUCTURE CLEAN STRUCTURE FILL
C00467	STRUCTURE REMOVAL
C00462	STRUCTURE TO BE ADJUST
C00470	STRUCTURE TO BE RECONSTR
C00263	STUMP SYMBOL
C00126	SUMMIT EX
C00463	SUMMIT PR
C00128	SURVEY MARKER SYMBOL
C00774	SURVLOAD POINT CELL
C00775	SURVLOAD TIC CELL
C00452	SWALE PR
C00139	TEL SPLICE BOX ABV GND
C00550	TEL UNDGND PAT EX
C00552	TEL UNDGND PAT PR
C00121	TELEPHONE POLE EX

C00446	TELEPHONE POLE PR
C00779	TEMP EASEMENT PR
C00120	TOWN CNTY SECT GRANT
C00179	TRAFFIC SIGN EX
C00419	TRAFFIC SIGN PR
C00800	TRANSIT LINE
C00626	TRANSITION LEFT W4 2R
C00627	TRANSITION RIGHT W4 2L
C00438	TRAVEL DETAILS TIC PAT
C01285	TREE TRUNK PROTECTION
C00436	TRVL DETAIL HATCH PAT
C00789	TS BACKPLATE EX
C00788	TS BACKPLATE PR
C00610	TS CABLE NUMBER EX
C00609	TS CABLE NUMBER PR
C00510	TS COMB MAST ARM EX
C00528	TS COMB MAST ARM PR
C00513	TS CONDUIT SPLICE EX
C00531	TS CONDUIT SPLICE PR
C00571	TS CONTROLLER EX
C00189	TS CONTROLLER PR
C00505	TS DET LOOP LARGE EX
C00576	TS DET LOOP LARGE PR
C01011	TS DET LOOP QUAD EX
C01012	TS DET LOOP QUAD PR
C00573	TS DET LOOP SMALL EX
C00575	TS DET LOOP SMALL PR
C00519	TS GALV STEEL COND PAT EX
C00113	TS GULFBOX EX
C00114	TS GULFBOX PR
C00173	TS HANDHOLE EX
C00181	TS HANDHOLE PR
C00567	TS HDUTY HANDHOLE EX
C00506	TS HEAD EX
C00524	TS HEAD PR
C00525	TS HEAD W BACK PR
C00507	TS HEAD W BKPL EX
C00564	TS JUNCTION BOX EX
C00481	TS JUNCTION BOX PR
C00786	TS LT TURN GREEN EX
C00613	TS LT TURN GREEN PR
C00785	TS LT TURN YELLOW EX
C00612	TS LT TURN YELLOW PR
C00512	TS PED PUSH BUTTON EX
C00530	TS PED PUSH BUTTON PR

C00619 C00176 C00415 C00583 C00582 C00937 C00614 C00630 C00244 C00242 C00243 C00682 C00691 C00569 C00191 C01106 C01107	TSC RAMP METER PR TSC SERVICE INSTALL EX TSC SERVICE INSTALL PR TSC TRAF FLOW ARROW EX TSC TRAF FLOW ARROW PR TSC UNDGRD CABLE EX TSC VEH MOVE TERM TWO WAY TRAFFIC SIGN W6 3 UTIL AS GUY POLE EX UTIL AS POWERLINE POLE EX UTIL AS TELEPHONE POLE EX UTIL BBOX WMETER VBOX EX UTIL BBOX WMETER VBOX PR UTIL CONTROLLER EX UTIL ONTROLLER PR UTIL DBLE HANDHOLE PR
C00487	UTIL HANDHOLE EX
C00681	UTIL HANDHOLE PR
C00490	UTIL HDUTY HANDHOLE EX
C00185	UTIL HDUTY HANDHOLE PR
C00489	UTIL JUNCTION BOX EX
C00197	UTIL JUNCTION BOX PR
C00165 C00195	UTIL LIGHT POLE EX UTIL LIGHT POLE PR
C00195 C00168	UTIL MANHOLE VV EX
C00108	UTIL MANHOLE W PR
C00193	UTIL PIPELINE WARNING SYMBL
C00357	UTIL POINT
C00337	UTIL POWER POLE EX
C00188	UTIL POWER POLE PR
C00488	UTIL SPLICE BOX ABV GND EX
C00450	UTIL SPLICE BOX ABV GND PR
EXUTIL	UTIL SYMBOL EX
PRUTIL	UTIL SYMBOL PR
C00164	UTIL TRAFFIC SIGNAL EX
C00402	UTIL TRAFFIC SIGNAL PR
C00680	UTIL WATER METER EX
C00241	UTIL WIRE LINE
C00472	VALVE BOX TO BE ADJUSTED
C00781	VEGETATION LINE
C00500	VERT CURVE DATA EX
C00475	VERT CURVE DATA PR
C00557	WATER PIPE UNDGND PAT EX
C00560	WATER PIPE UNDGND PAT PR

C00782	WATERS EDGE LINI
000102	

C00265	WOODS BUSH PATTERN EX
C00180	XSEC WATR SURF INDIC

CHAPTER 9

Numeric (By Name) Index To Cell Library

Note:

Cells with a TSC prefix are to be used for Traffic Systems Center jobs only.

Cells with an AS prefix are to be used for Aerial Surveys work.

Cells are sized to be displayed with 1:600 plots assuming an active scale of one.

Sheet cells and TSC cells are listed at the end of the index.

Exceptions to this are noted with the cells. Cells display level = color except when noted otherwise (generally utilities).

NAME	DESCRIPTION
C00101	ROW CORNER MONUMENT EX
C00102	DRAINAGE CATCH BASIN
C00103	HORIZ CURVE DATA EX
C00104	RDWY DITCH FLOW EX
C00105	EVERGREEN TREE EX
C00107	GUARDRAIL PAT EX
C00109	IRON PIPE SET
C00110	HEADWALL EX
C00111	LEVEE OR NOISE BARRIER
C00112	MAIL BOX
C00113	TS GULFBOX EX
C00114	TS GULFBOX PR
C00115	ALI PI INDICATOR EX
C00118	EOP PNT INDICATOR EX
C00119	UTIL POWER POLE EX
C00120	TOWN CNTY SECT GRANT
C00121	TELEPHONE POLE EX
C00122	SAME OWNERSHIP SYMBOL
C00125	ADVERTISING SIGN
C00126	SUMMIT EX
C00127	DASHED PROPERTY LINE
C00128	SURVEY MARKER SYMBOL
C00130	QUARTER CORNER OFFSET SE

C00131	DR PROF WTR SURF INDIC
C00132	SECTION CORNER SYMBOL
C00133	QUARTER CORNER OFFSET NW
C00134	RR TRACK PAT EX
C00136	ROW PATTERN
C00137	SANITARY SEWER EX
C00138	IRON PIPE FOUND
C00139	TEL SPLICE BOX ABV GND
C00140	ROW CORNER MONUMENT PR
C00143	CULVERT END SECTION
C00145	ARROW FILLED
C00146	NORTH ARROW DIST 1
C00147	PROF PI INDICATOR EX
C00148	TS UNDGND CABLE PR
C00149	PROF PNT INDICATOR EX
C00150	DRAINAGE MANHOLE EX
C00151	NORTH ARROW DIST 2
C00152	NORTH ARROW DIST 3
C00153	NORTH ARROW DIST 4
C00154	NORTH ARROW DIST 5
C00155	NORTH ARROW DIST 6
C00156	NORTH ARROW DIST 7
C00157	NORTH ARROW DIST 8
C00158	NORTH ARROW DIST 9
C00163	DITCH CHECK EX
C00164	UTIL TRAFFIC SIGNAL EX
C00165	UTIL LIGHT POLE EX
C00167	FIRE HYDRANT EX
C00168	UTIL MANHOLE VV EX
C00169	INLET EX
C00170	DECIDUOUS TREE EX
C00171	MARSH
C00172	ROW MARKER EX
C00173	TS HANDHOLE EX
C00174	LGT HANDHOLE EX
C00175	ALI POINT INDICATOR EX
C00177	TS SERVICE INSTALL EX
C00178	LGT POWER POLE EX
C00179	TRAFFIC SIGN EX
C00180	XSEC WATR SURF INDIC
C00181	TS HANDHOLE PR
C00182	LGT HANDHOLE PR
C00183	LGT HDUTY HANDHOLE PR
C00184	LGT HDUTY HANDHOLE PR
C00185	UTIL HDUTY HANDHOLE PR

C00186 C00187 C00188 C00190 C00191 C00192 C00193 C00194 C00195 C00196 C00197 C00198 C00199 C00201 C00202 C00203 C00204 C00205 C00207 C00216 C00219 C00221 C00223 C00224 C00233 C00224 C00233 C00244 C00233 C00244 C00237 C00238 C00245 C00245 C00245 C00256 C00257	TS SERVICE INSTALL PR LGT POWER POLE PR UTIL POWER POLE PR TS CONTROLLER PR LGT CONTROLLER PR RR CONTROLLER PR RR CONTROL BOX PR UTIL MANHOLE W PR DRAINAGE MANHOLE PR LGT JUNCTION BOX PR UTIL LIGHT POLE PR LGT JUNCTION BOX PR EOP PNT INDICATOR PR ALI POINT INDICATOR PR AS HORIZ CONTROL STATION AS HORIZ CONTROL STATION AS VERTICAL CONTROL STATION AS VERTICAL PICTURE TIE AS PRINCIPAL POINT GUARDRAIL POST EX NOTE GROUND DATA OMITTE RR ABANDONED PATTERN OTHER PVMT ITEM POINT EX MAJOR ROADS POINT EX FIELD LINE SYMBOL LABEL SWIMMING POOL LABEL GOLF GREEN LABEL SAND TRAP CULTURE POINT UTIL WIRE LINE UTIL AS POWERLINE POLE EX UTIL AS TELEPHONE POLE EX UTIL AS GUY POLE EX AS UTIL TRANSMISSION TOWER LABEL PIPELINE WARNING LABEL PIPELINE WARNING
C00263	STUMP SYMBOL
C00264	LABEL SCRUB
C00265	WOODS BUSH PATTERN EX
C00273	AS WATER POINT
C00277	SINKHOLE PAT COMB
C00278	SINKHOLE PAT INDEX
C00280	SINKHOLE PAT BROKEN
C00281	SINKHOLE PAT INDEX DASHED

C00283 C00285 C00287 C00288 C00290 C00291 C00292 C00293 C00294 C00295 C00301 C00302 C00303 C00309 C00312 C00313 C00322 C00333 C00345 C00356	AS SPOT EL SYMBOL LABEL ROW PROPERTY CORNER EX PROPERTY LINE SYMBOL AS TITLE BOX 9 9 94 AS NOTE NGVD 29 AS NOTE NAVD 88 AS NOTE NAD 27 GRID AS NORTH ARROW AS SCALE BAR AS NOTE NAD 83 GRID AS SHEET INDEX RIGHT AS SHEET INDEX LEFT AS NOTE BUILDING CLASS AS NOTE DISCLAIMER AS SHEET INDEX VERTICAL AS NOTE BRIDGE RR POINT AS GRID TICK UTIL PIPELINE WARNING SYMBL
C00357	UTIL POINT
C00361	DISAPPEARING DITCH
C00383	AS TEST X
C00391 C00392	AS DIST MAPING GENRL LEGEND LABEL FLAG POLE
C00392 C00400	ROW DIST 1 PR
C00400 C00401	EASEMENT PR
	LAGEMENTIN
(こ)()な()	LITIL TRAFFIC SIGNAL PR
C00402	UTIL TRAFFIC SIGNAL PR
C00408	ALI PI INDICATOR PR
C00408 C00418	ALI PI INDICATOR PR RR CROSSING GATE PR
C00408	ALI PI INDICATOR PR
C00408 C00418 C00419	ALI PI INDICATOR PR RR CROSSING GATE PR TRAFFIC SIGN PR
C00408 C00418 C00419 C00420	ALI PI INDICATOR PR RR CROSSING GATE PR TRAFFIC SIGN PR GUARDRAIL PAT PR
C00408 C00418 C00419 C00420 C00421	ALI PI INDICATOR PR RR CROSSING GATE PR TRAFFIC SIGN PR GUARDRAIL PAT PR CORR MED AREA PAT PR
C00408 C00418 C00419 C00420 C00421 C00422	ALI PI INDICATOR PR RR CROSSING GATE PR TRAFFIC SIGN PR GUARDRAIL PAT PR CORR MED AREA PAT PR DIRECTION OF TRAFFIC
C00408 C00418 C00419 C00420 C00421 C00422 C00423	ALI PI INDICATOR PR RR CROSSING GATE PR TRAFFIC SIGN PR GUARDRAIL PAT PR CORR MED AREA PAT PR DIRECTION OF TRAFFIC PANELS 1 PANELS 2 BARRICADES W EDGE LINE
C00408 C00418 C00419 C00420 C00421 C00422 C00423 C00424	ALI PI INDICATOR PR RR CROSSING GATE PR TRAFFIC SIGN PR GUARDRAIL PAT PR CORR MED AREA PAT PR DIRECTION OF TRAFFIC PANELS 1 PANELS 2 BARRICADES W EDGE LINE BARRICADES TYPE 1 OR 2 DIA
C00408 C00418 C00419 C00420 C00421 C00422 C00423 C00424 C00425 C00426 C00427	ALI PI INDICATOR PR RR CROSSING GATE PR TRAFFIC SIGN PR GUARDRAIL PAT PR CORR MED AREA PAT PR DIRECTION OF TRAFFIC PANELS 1 PANELS 2 BARRICADES W EDGE LINE BARRICADES TYPE 1 OR 2 DIA BARRICADE TYPE II
C00408 C00418 C00419 C00420 C00421 C00422 C00423 C00424 C00425 C00426 C00427 C00428	ALI PI INDICATOR PR RR CROSSING GATE PR TRAFFIC SIGN PR GUARDRAIL PAT PR CORR MED AREA PAT PR DIRECTION OF TRAFFIC PANELS 1 PANELS 2 BARRICADES W EDGE LINE BARRICADES TYPE 1 OR 2 DIA BARRICADE TYPE II FLASHING LIGHT
C00408 C00418 C00419 C00420 C00421 C00422 C00423 C00424 C00425 C00426 C00427 C00428 C00429	ALI PI INDICATOR PR RR CROSSING GATE PR TRAFFIC SIGN PR GUARDRAIL PAT PR CORR MED AREA PAT PR DIRECTION OF TRAFFIC PANELS 1 PANELS 2 BARRICADES W EDGE LINE BARRICADES TYPE 1 OR 2 DIA BARRICADE TYPE II FLASHING LIGHT SIGN FLAG
C00408 C00418 C00419 C00420 C00421 C00422 C00423 C00424 C00425 C00426 C00427 C00428 C00429 C00430	ALI PI INDICATOR PR RR CROSSING GATE PR TRAFFIC SIGN PR GUARDRAIL PAT PR CORR MED AREA PAT PR DIRECTION OF TRAFFIC PANELS 1 PANELS 2 BARRICADES W EDGE LINE BARRICADES TYPE 1 OR 2 DIA BARRICADE TYPE II FLASHING LIGHT SIGN FLAG BARRICADES TYPE III
C00408 C00418 C00419 C00420 C00421 C00422 C00423 C00424 C00425 C00426 C00427 C00428 C00429 C00430 C00431	ALI PI INDICATOR PR RR CROSSING GATE PR TRAFFIC SIGN PR GUARDRAIL PAT PR CORR MED AREA PAT PR DIRECTION OF TRAFFIC PANELS 1 PANELS 2 BARRICADES W EDGE LINE BARRICADES TYPE 1 OR 2 DIA BARRICADE TYPE II FLASHING LIGHT SIGN FLAG BARRICADES TYPE III BIT TAPER PATTERN
C00408 C00418 C00419 C00420 C00421 C00422 C00423 C00424 C00425 C00426 C00427 C00428 C00429 C00430	ALI PI INDICATOR PR RR CROSSING GATE PR TRAFFIC SIGN PR GUARDRAIL PAT PR CORR MED AREA PAT PR DIRECTION OF TRAFFIC PANELS 1 PANELS 2 BARRICADES W EDGE LINE BARRICADES TYPE 1 OR 2 DIA BARRICADE TYPE II FLASHING LIGHT SIGN FLAG BARRICADES TYPE III

C00434	RR FLASHING SIGNAL PR
C00435	BIT SHOULDER AREA PAT
C00436	TRVL DETAIL HATCH PAT
C00437	KEYED LONG JT W TIE PAT
C00438	TRAVEL DETAILS TIC PAT
C00439	AGG SHOULDER PATTERN
C00440	KEYED LONG JT PATTERN
C00441	FIRE HYDRANT PR
C00443	INLET PR
C00445	CATCH BASIN PR
C00446	TELEPHONE POLE PR
C00447	REMOVAL ITEM TIC PAT
C00448	PIPE UNDERDRAIN PR
C00450	UTIL SPLICE BOX ABV GND PR
C00452	SWALE PR
C00453	SPECIAL ADJUSTMENT
C00457	RR TRACK PAT PR
C00458	DITCH CHECK PR
C00459	PAVT REM ADJ
C00460	FRAME AND GRATE ADJUST
C00461	FRAME AND LID ADJUST
C00462	STRUCTURE TO BE ADJUST
C00463	SUMMIT PR
C00464	ITEM TO BE ABANDONED
C00465	STRUCTURE CLEAN
C00466	STRUCTURE FILL
C00467	STRUCTURE REMOVAL
C00468	ITEM TO BE MOVED
C00469	ITEM TO BE RELOCATED
C00470	STRUCTURE TO BE RECONSTR
C00471	DOMESTIC SRVC BOX ADJ
C00472	VALVE BOX TO BE ADJUSTED
C00475	VERT CURVE DATA PR
C00476	CULVERT END SECTION PR
C00477	HEADWALL PR
C00478	RDWY DITCH FLOW PR
C00480	REMOVAL HATCHING PAT
C00481	TS JUNCTION BOX PR
C00482	PROF PNT INDICATOR PR
C00483	PROF PI INDICATOR PR
C00485	HORIZ CURVE DATA PR
C00486	CL NO TIC PAT EX
C00487	UTIL HANDHOLE EX
C00488	UTIL SPLICE BOX ABV GND EX
C00489	UTIL JUNCTION BOX EX

C00490	UTIL HDUTY HANDHOLE EX
C00491	RR CONTROL BOX EX
C00492	CL PATTERN PR
C00493	FENCE PATTERN EX
C00494	RR CROSSING GATE EX
C00495	RR FLASHING SIGNAL EX
C00496	CORR MED AREA PAT EX
C00497	PIPE UNDERDRAIN EX
C00500	VERT CURVE DATA EX
C00505	TS DET LOOP LARGE EX
C00506	TS HEAD EX
C00507	TS HEAD W BKPL EX
C00508	TS SIGNAL POST EX
C00509	TS STEEL MAST ARM EX
C00510	TS COMB MAST ARM EX
C00511	TS PED SIG HEAD EX
C00512	TS PED PUSH BUTTON EX
C00513	TS CONDUIT SPLICE EX
C00514	TS WOOD POLE EX
C00516	TS VEH DET PRIORITY EX
C00518	TS VEH DETECT MAG EX
C00519	TS GALV STEEL COND PAT EX
C00520	TS VEH DETECT MAG PR
C00524	TS HEAD PR
C00525	TS HEAD W BACK PR
C00526	TS SIGNAL POST PR
C00527	TS STEEL MAST ARM PR
C00528	TS COMB MAST ARM PR
C00529	TS PED SIG HEAD PR
C00530 C00531	TS PED PUSH BUTTON PR TS CONDUIT SPLICE PR
C00531	TS WOOD POLE PR
C00532	TS VEH DET PRIORITY PR
C00554	TEL UNDGND PAT EX
C00550	ELECTRIC UNDGND PAT EX
C00551	TEL UNDGND PAT PR
C00553	ELEC UNDGND PAT PR
C00554	CENTERLINE BREAK CIRCLE PR
C00555	CENTERLINE STATION TICK PR
C00557	WATER PIPE UNDGND PAT EX
C00558	GAS PIPE UNDGND PAT EX
C00559	OIL PIPE UNDGND PAT EX
C00560	WATER PIPE UNDGND PAT PR
C00561	GAS PIPE UNDGND PAT PR
C00562	OIL PIPE UNDGND PAT PR

000504	TO UNIOTION DOV EV
C00564	TS JUNCTION BOX EX
C00565	LGT JUNCTION BOX EX
C00567	TS HDUTY HANDHOLE EX
C00568	LGT HDUTY HANDHOLE EX
C00569	UTIL CONTROLLER EX
C00571	TS CONTROLLER EX
C00572	LGT CONTROLLER EX
C00572	TS DET LOOP SMALL EX
C00575	TS DET LOOP SMALL PR
C00576	TS DET LOOP LARGE PR
C00577	LGT PULL POINT EX
C00578	PM URB LT TRN ONLY EX
C00579	PM URB RT TRN ONLY EX
C00580	PM URB TWO WAY LT TRN EX
C00581	LGT TRAF FLOW ARROW PR
C00584	PM RAISED MARKING 1 EX
C00585	PM RAISED MARKING 2 EX
C00586	PM RAISED MARKING 3 EX
C00587	PM RAISED MARKING 4 EX
C00588	PM RAISED MARKING 5 EX
C00589	PM RAISED MARKING 6 EX
C00590	PM URB LT TURN ONLY PR
C00590	LS SHADE TREECODE A
C00594	LS INTERMEDIATE TREE
C00595	LS SHRUBS CODE C OR D
C00596	LEGEND LANDSCAPING
C00597	PM URB LT TRN ONLY PR
C00598	PM URB RT TRN ONLY PR
C00599	PM URB TWO WAY LT TRN PR
C00600	PM URB COMB LT ONLY PR
C00601	PM URB COMB LT ONLY EX
C00602	PM RR CROSSING PR
C00603	PM RR CROSSING EX
C00604	TS RACEWAY EX
C00605	TS TRAF TEMP SIG HEAD
C00606	TS SIG SECT SMALL PR
C00607	TS SIG SECT LARGE PR
C00609	TS CABLE NUMBER PR
C00610	TS CABLE NUMBER EX
C00610	TS LT TURN YELLOW PR
C00613	TS LT TURN GREEN PR
C00615	TS WALK DONT WALK PR
C00616	LEGEND TS PR
C00617	LEGEND TS EX
C00618	LGT PULL POINT PR

C00621	LGT ELECTRICAL GND EX
C00621	LGT ELECTRICAL GND PR
C00623	LGT THAF FLOW ARROW EX
C00626	TRANSITION LEFT W4 2R
C00626	TRANSITION RIGHT W4 2L
C00627	REVERSE RIGHT W4 2L
C00628	REVERSE LEFT W1 4L
C00630	TWO WAY TRAFFIC SIGN W6 3
C00630	RD CONST AHD W20 1 0
C00631	ROAD CLSD AHD W20 1 0
C00632	RT LN CLSD AHD W20 T0
C00634	LFT LN CLSD AND W20 K0
C00635	SINGLE LANE AHD
C00636	ROAD CLOSED R11 2
C00637	ONE WAY R6 1R
C00638	DETOUR M4 10R 0
C00639	LARGE ARROW TWO WAY W1 7 0
C00640	LARGE ARROW ONE WAY W1 6 0
C00641	LFT TRN LANE R3 L100
C00642	STOP HERE ON RED R10 6AL
C00643	KEEP LEFT R47AL
C00644	KEEP RIGHT R47 AR
C00645	NO LEFT TURN R3 2
C00646	NO RIGHT TURN R3 1
C00647	ROAD CLSD TO TRAF R11 4
C00648	DETOUR AHD W20 2
C00649	KEEP LEFT R47BL
C00650	KEEP RIGHT R47BR
C00651	LGT LIGHT UNIT TWIN 1 PR
C00652	LGT LIGHT UNIT TWIN 2 PR
C00653	LGT LIGHT UNIT TWIN 3 PR
C00654	LGT LIGHT UNIT TWIN 4 PR
C00655	LGT LIGHT UNIT TWIN 5 PR
C00656	LGT HIGH MAST POLE 1 PR
C00657	LGT HIGH MAST POLE 2 PR
C00658	LGT HIGH MAST POLE 3 PR
C00659	LGT HIGH MAST POLE 4 PR
C00660	LGT HIGH MAST POLE 5 PR
C00661	LGT HIGH MAST POLE 6 PR
C00662	LGT LIGHT UNIT 1 PR
C00663	LGT LIGHT UNIT 2 PR
C00664	LGT LIGHT UNIT 3 PR
C00665	LGT LIGHT UNIT 4 PR
C00666	LGT LIGHT UNIT 5 PR
C00668	LEGEND LGT WIRE DIA PR

C00669	LGT UNDERPASS LUMINAIRE PR
C00670	LGT FOUND A OR C PR
C00671	LGT COMB MAST ARM PR
C00673	CONDUIT PR
C00677	CBL IN DCT W GND 1 PR
C00680	UTIL WATER METER EX
	_
C00681	UTIL HANDHOLE PR
C00682	UTIL BBOX WMETER VBOX EX
C00683	BURIED CABLE PAT 1 PR
C00687	BURIED CABLE PAT 1 PR
C00691	UTIL BBOX WMETER VBOX PR
C00692	LGT COMB MAST ARM EX
C00693	LGT LIGHT UNIT 1 EX
C00694	LGT LIGHT UNIT 2 EX
C00695	LGT LIGHT UNIT 3 EX
C00696	LGT LIGHT UNIT 4 EX
C00697	LGT LIGHT UNIT 5 EX
	LGT LIGHT UNIT TWIN 1 EX
C00698	
C00699	LGT LIGHT UNIT TWIN 2 EX
C00700	LGT LIGHT UNIT TWIN 3 EX
C00701	LGT LIGHT UNIT TWIN 4 EX
C00702	LGT LIGHT UNIT TWIN 5 EX
C00703	LGT HIGH MAST POLE 1 EX
C00704	LGT HIGH MAST POLE 2 EX
C00705	LGT HIGH MAST POLE 3 EX
C00706	LGT HIGH MAST POLE 4 EX
C00707	LGT HIGH MAST POLE 5 EX
C00708	LGT HIGH MAST POLE 6 EX
C00709	LGT UNDERPASS LUMINAIRE EX
C00710	LGT FOUND A OR C EX
C00718	CBL IN DCT W GND 1 EX
C00710	CBL IN DCT W GND 1 EX
C00722	CBL IN DCT W GND 1 EX
	CBL IN DCT WO GND 1 EX
C00730	
C00738	PM SH DIAG PAT PR
C00739	PM MARKR AMBR 2 W PR
C00740	PM URB THRU ONLY PR
C00741	PM URB THRU ONLY EX
C00742	TS RACEWAY PR
C00751	CBL IN DCT WO GND 1 PR
C00755	LS SEEDLING TYPE 1 PAT
C00756	LS HATCHING PATTERN
C00757	LS HATCHING PATTERN
C00758	LS SEEDING CL4 PAT
C00760	LS SOD PATTERN
000100	LO GOD I ATTLINI

C00761	LS EVERGREEN TREE
C00762	LS DECIDUOUS TREE
C00763	LS MOWLINE PATTERN
C00764	LS PERENNIAL PLANTS PAT
C00765	LS SEED CL2 PAT
C00766	LS SHADE TREE EX
C00767	LS INTER TREE EX
C00768	PM MARKR AMBR 1 W PR
C00769	PM RAISED MARKING 3 PR
C00709	PM RAISED MARKING 3 FR
C00770	PM MARKR CRSTL 1 W PR
C00771	PM RAISED MARKING 6 PR
C00772	PM SH DIAGONAL PAT EX
C00773	SURVLOAD POINT CELL
	SURVLOAD FOINT CELL SURVLOAD TIC CELL
C00775	
C00776	EARTHWORKS BALANCE PNT
C00777	EARTHWORKS BGN END PNT
C00778	EASEMENT EX
C00779	TEMP EASEMENT PR
C00780	BIT REMOVAL AREA
C00781	VEGETATION LINE
C00782	WATERS EDGE LINE
C00783	TS SIG SECT SMALL EX
C00784	TS SIG SECT LARGE EX
C00785	TS LT TURN YELLOW EX
C00786	TS LT TURN GREEN EX
C00787	TS WALK DONT WALK EX
C00788	TS BACKPLATE PR
C00789	TS BACKPLATE EX
C00790	PM RUR LT TRN ONLY EX
C00791	PM URB LT TRN ARROW EX
C00792	PM RUR LT TRN ONLY PR
C00793	PM URB LT TRN ARROW PR
C00794	PM RUR RT TRN ONLY EX
C00795	PM URB RT TRN ARROW EX
C00796	PM RUR RT TRN ONLY PR
C00797	PM URB RT TRN ARROW PR
C00798	DRAINAGE FLOW LINE EX
C00799	DRAINAGE FLOW LINE PR
C00800	TRANSIT LINE
C00904	PM SKIP DASH LN PAT EX
C00905	PM SKIP DASH LN PAT PR
C00906	PM DOTTED LINES PAT EX
C00907	PM DOTTED LINES PAT PR
C00908	PM SKIP DASH WHITE PR

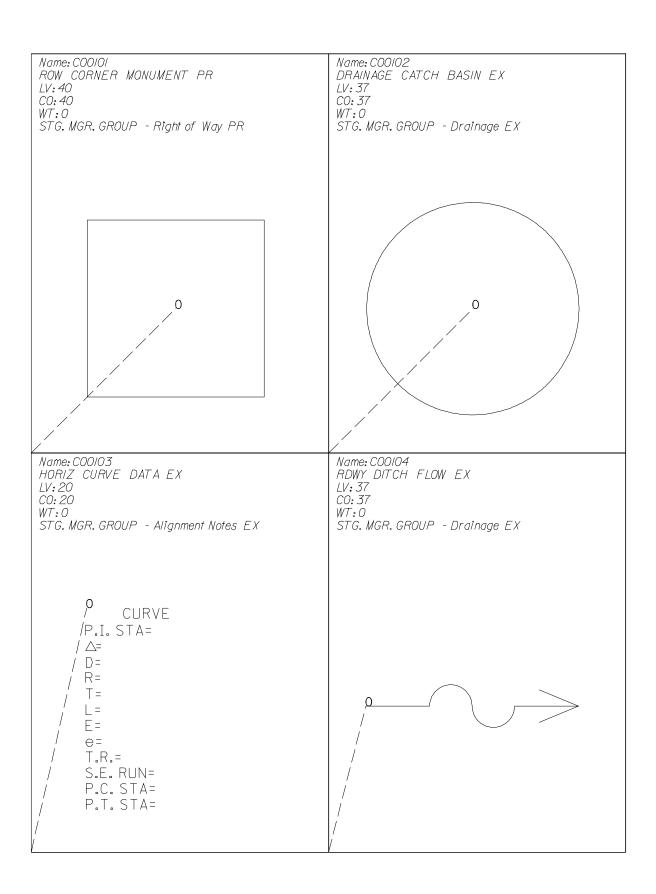
C00909 C00910 C00911 C00912 C00913 C00932 C00933 C00934 C00935 C00936 C01001 C01002 C01003 C01004 C01005 C01006 C01007 C01008 C01009 C01010 C01011 C01012 C01013	PM SKIP DASH YELLOW PR PM DBL CENTERLINE PAT EX PM DBL CENTERLINE PAT PR PM STOP LINE PAT EX PM STOP LINE PAT PR SANITARY SEWER PR STORM SEWER PAT PR CONDUIT EX SECT GRANT LN PAT TS UNDGND CABLE EX PM URB COMB RT TRN ONLY PR PM URB COMB RT ONLY EX STOP HERE ON RED R10 6AR DETOUR M4 10L 0 ONE WAY R6 1L BURIED CABLE FIB OPT PAT EX BURIED CABLE FIB OPT PAT PR BURIED CABLE TV PAT EX BURIED CABLE TV PAT PR STORM SEWER PAT EX TS DET LOOP QUAD EX TS DET LOOP QUAD PR RR CANT MAST ARM EX
C01013 C01014 C01015	RR CANT MAST ARM PR TS WALK DW SYMBOL PR
C01016	TS WALK DW SYMBOL EX
C01101	ROW SURV CERT
C01102	GRAPHIC SCALE DUAL
C01103	RR CROSSBUCK EX
C01104	RR CROSSBUCK PR ROW PARCEL TABLE
C01105 C01106	UTIL DBLE HANDHOLE EX
C01100	UTIL DBLE HANDHOLE PR
C01201	PM URB COMB LT ONLY EX
C01201	PM RUR COMB LT TRN ONLY PR
C01211	PM RUR COMB RT ONLY EX
C01212	PM RUR COMB RT TRN ONLY PR
C01215	DITCH CHECK TEMPORARY
C01220	EROSION CONTROL BLANKET
C01225	FAB. FRMD. CONC. MAT
C01235	FIBER MAT
C01240	INLET AND PIPE PROTECTION
C01241	PM RUR THRU ONLY EX
C01242	PM RUR THRU ONLY PR
C01260	RIPRAP

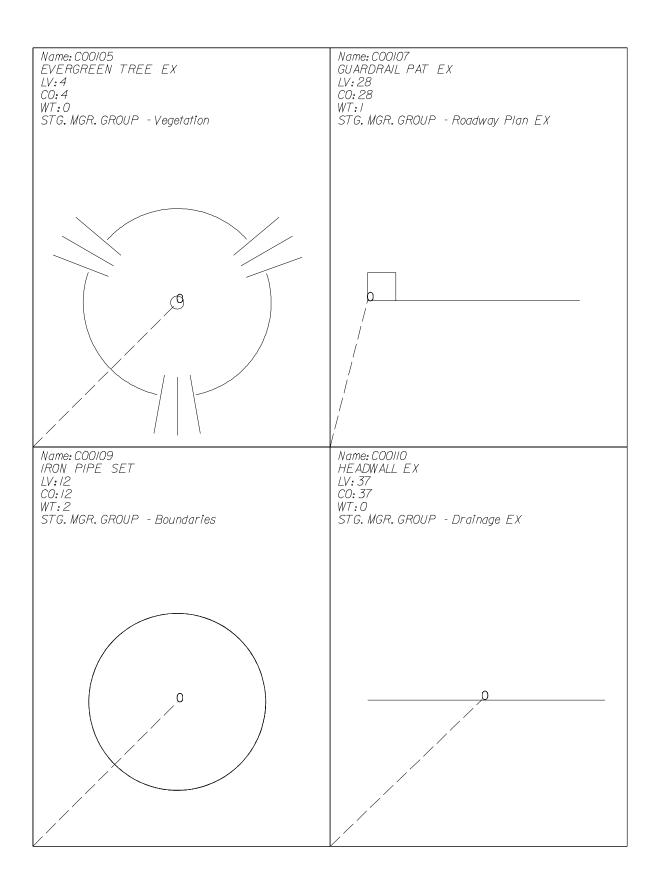
C01262 C01265	RIPRAP EX SEDIMENT BASIN
C01203	SEEDING PERMANENT
C01270	SEEDING CL7
C01275	TREE TRUNK PROTECTION
C01286	MULCH M1
C01280	MULCH M2 STAB
C01287	MULCH M3 HYDRO
C01291	PM RUR LT TRN ARROW EX
C01291	PM RUR LT TRN ARROW PR
C01295	PM RUR RT TRN ARROW EX
C01296	PM RUR RT TRN ARROW PR
C01299	MULCH TEMPORARY
EXUTIL	UTIL SYMBOL EX
PRUTIL	UTIL SYMBOL PR
C00116	SHEET PLAN 09 15 99
C00117	SHEET PLNPROF 09 15 99
C00123	SHEET IDS A 20
C00124	SHEET IDS A 20
C00129	SHEET IDS D1 9 94
C00135	SHEET COVER ENG 12 99
C00403	SHEET PLAT HWAYS D1
C00404	SHEET ROW 09 15 99
C00406	SHEET ROW PLANS 09 15 99
XSHEET	SHEET 5 SCALE 091599
C00106	TSC HANDHOLE EX
C00166	TSC LIGHT STANDARD EX
C00176	TSC SERVICE INSTALL EX
C00409	TSC HANDHOLE PR
C00410	TSC HDUTY HANDHOLE PR
C00415	TSC SERVICE INSTALL PR
C00416	TSC CONTROLLER PR
C00442	TSC LIGHT STANDARD PR
C00542	TSC PULL POINT EX
C00544	TSC RAMP METER EX
C00545	TSC FLASHER EX
C00566	TSC HDUTY HANDHOLE EX
C00570	TSC CONTROLLER EX
C00582	TSC TRAF FLOW ARROW PR
C00583	TSC TRAF FLOW ARROW EX TSC VEH MOVE TERM
C00614	TSC RAMP METER PR
C00619 C00620	TSC FLASHER PR
C00620 C00745	TSC POLYETH DUCT PAT EX
C00745 C00747	TSC POLYETH DUCT PAT EX
C00/4/	130 FOLICITI DUCI PAI PR

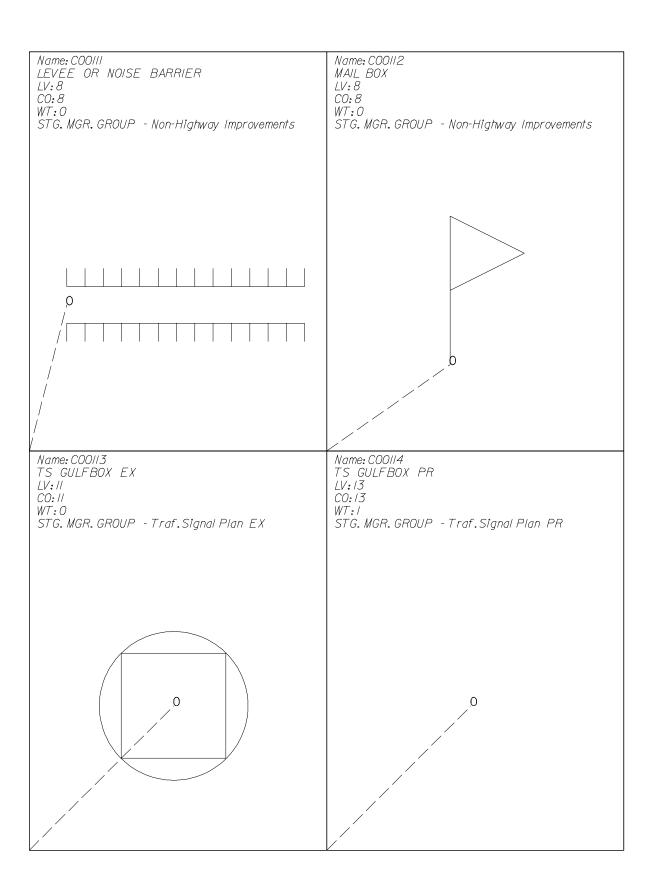
C00900	TSC DET LOOP SMALL EX
C00901	TSC DET LOOP LARGE EX
C00902	TSC DET LOOP SMALL PR
C00903	TSC DET LOOP LARGE PR
C00937	TSC UNDGRD CABLE EX

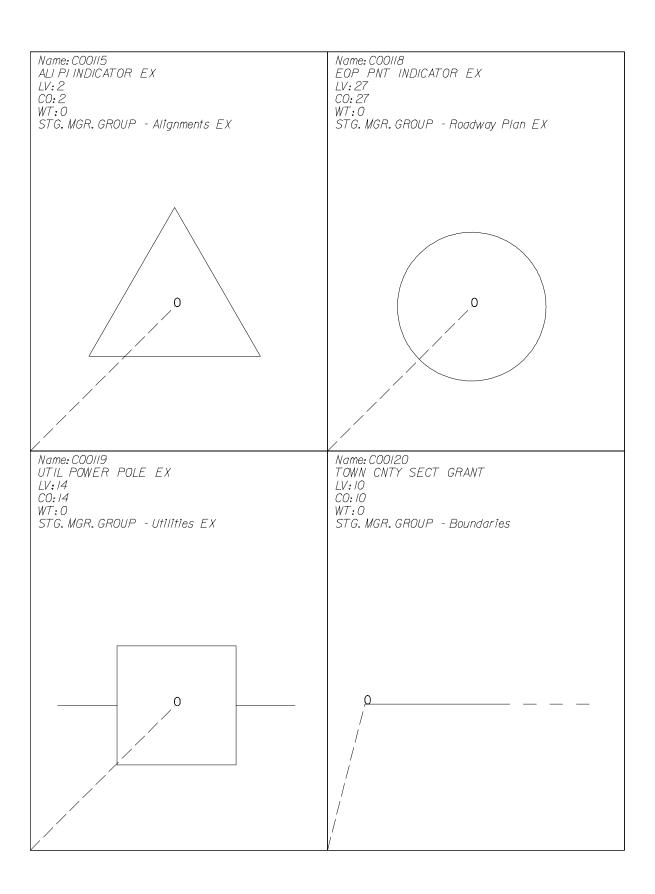
CHAPTER 10

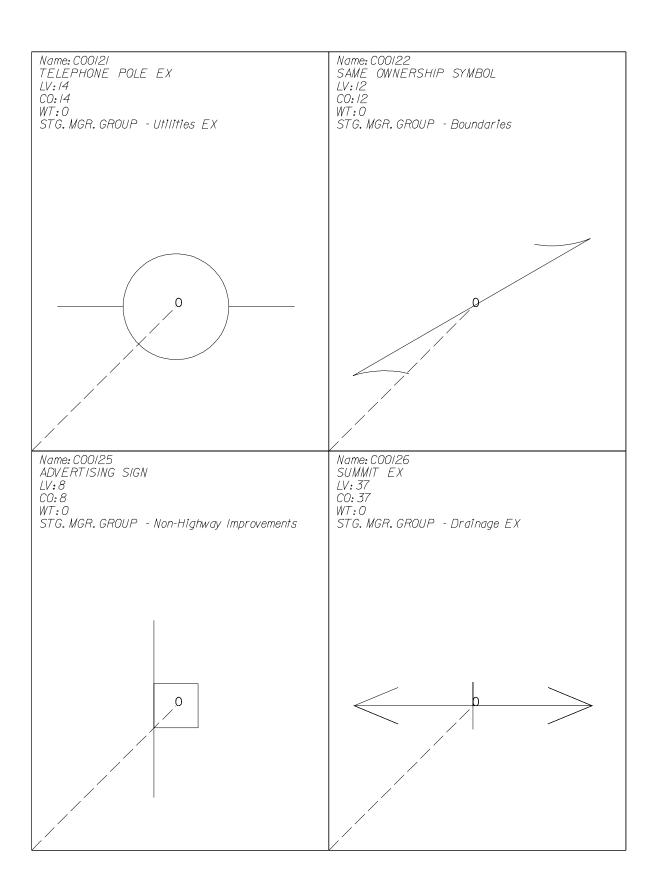
Cell Library

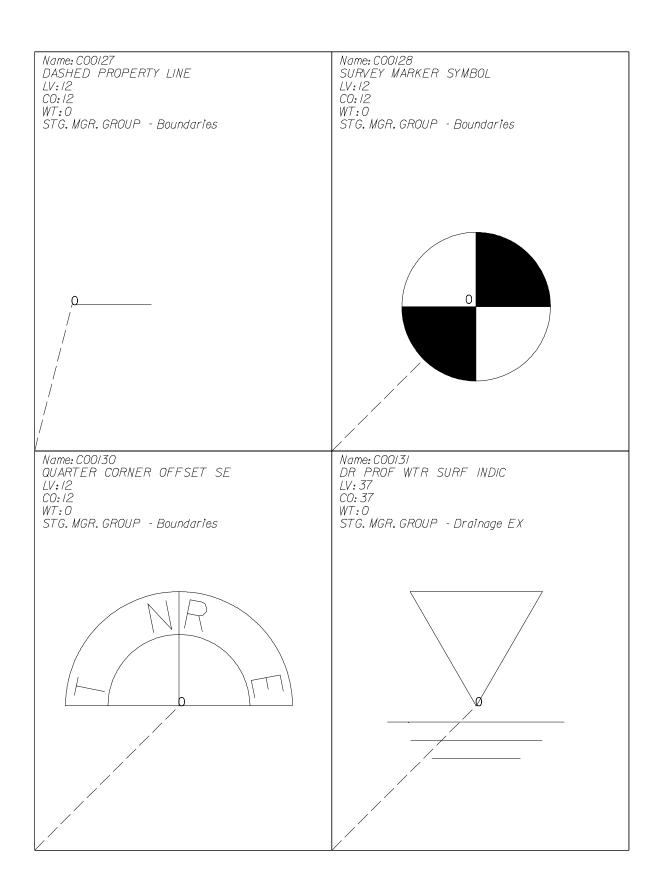


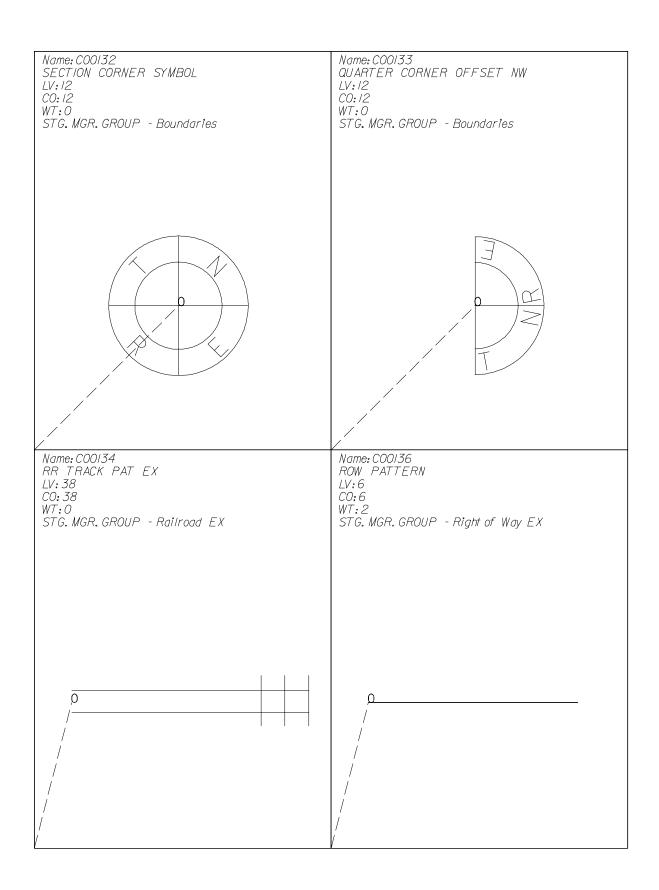


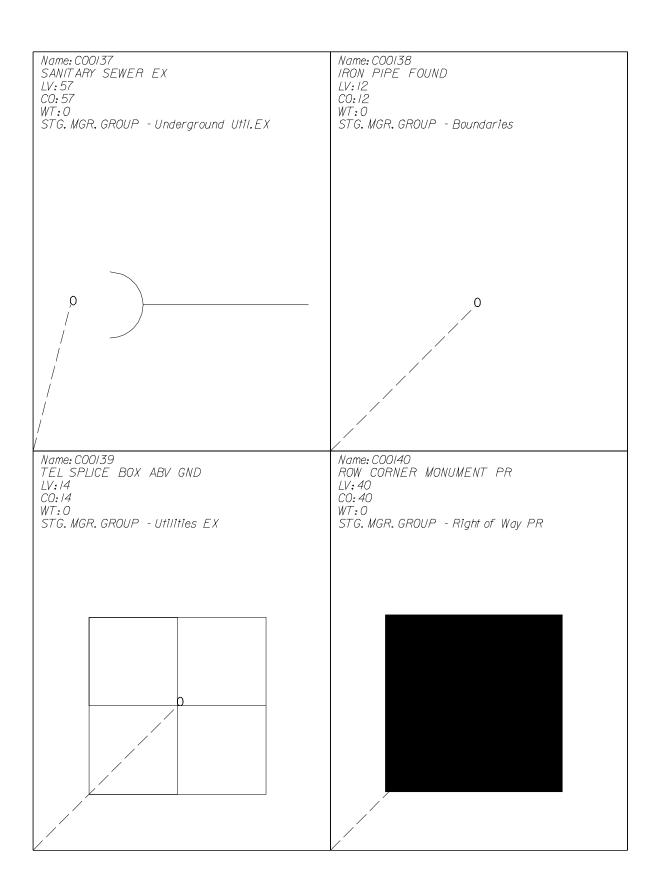


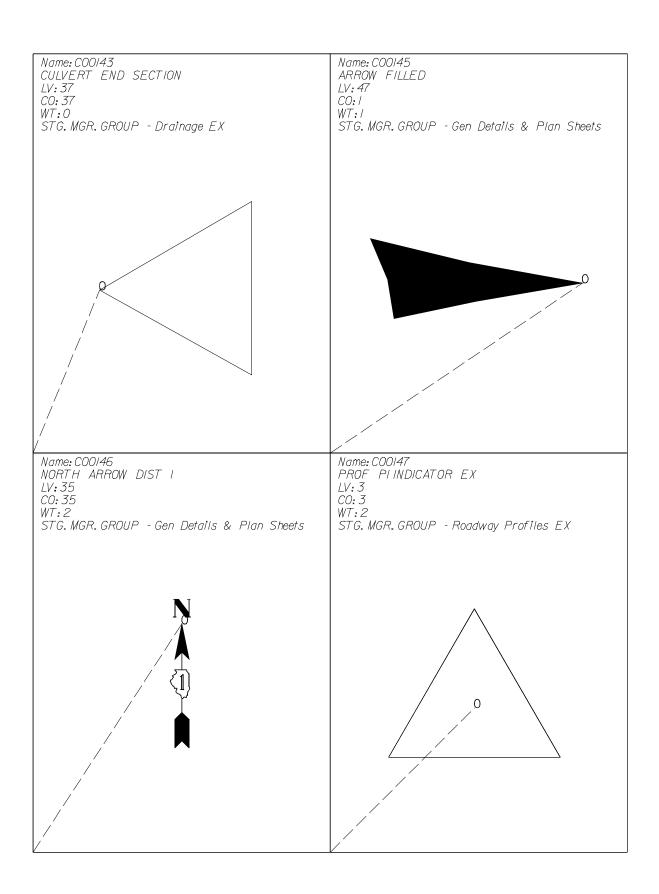


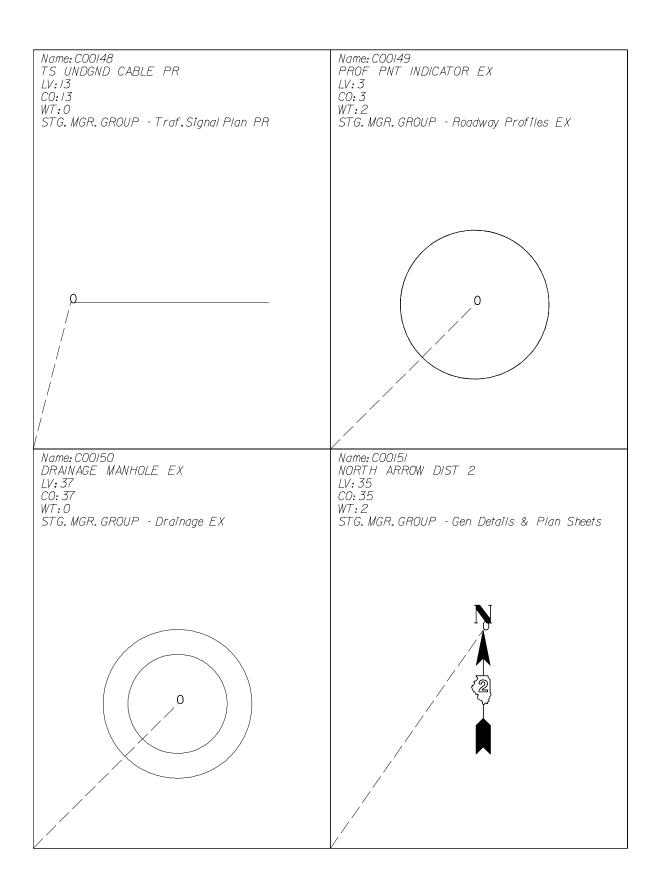


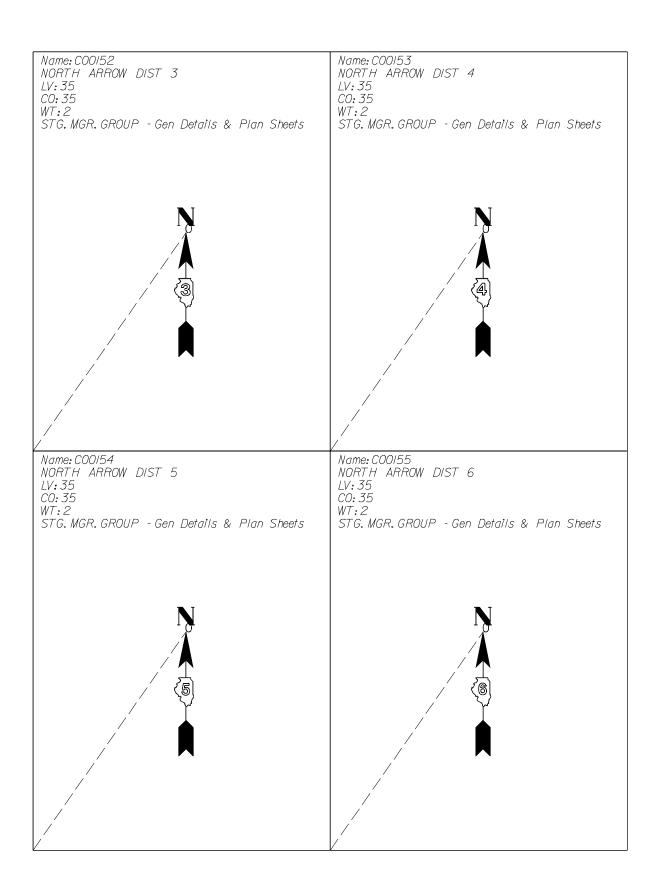


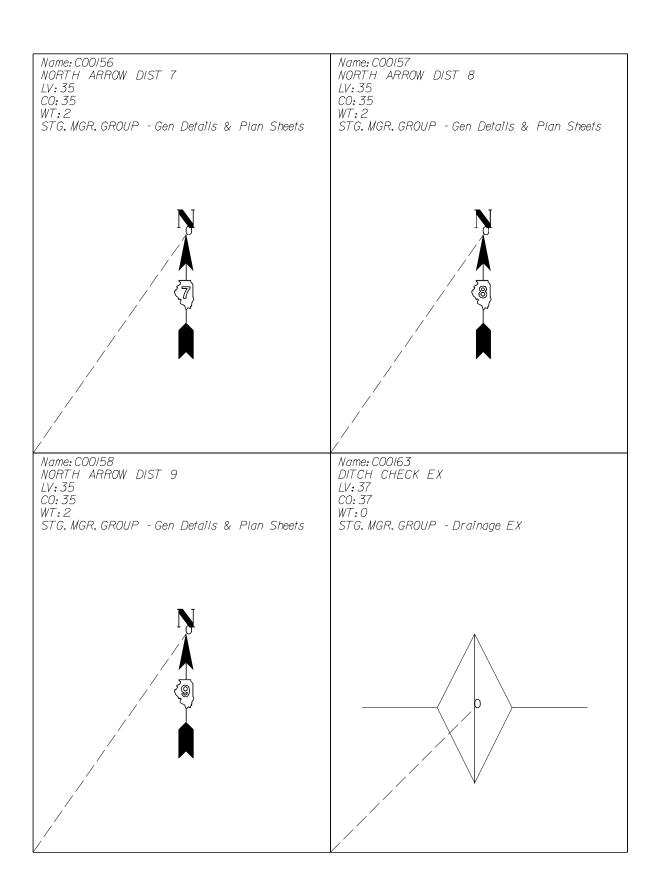


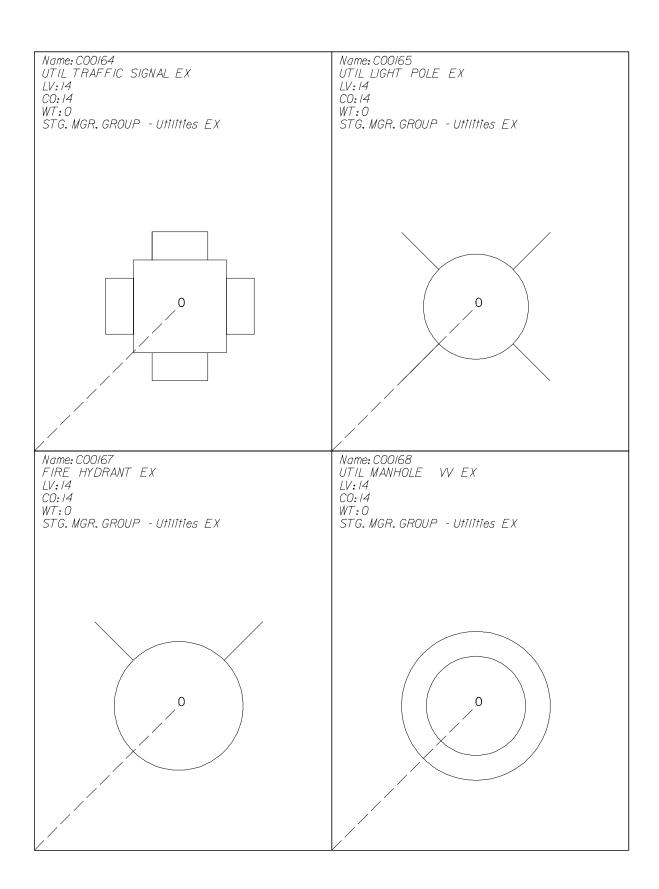


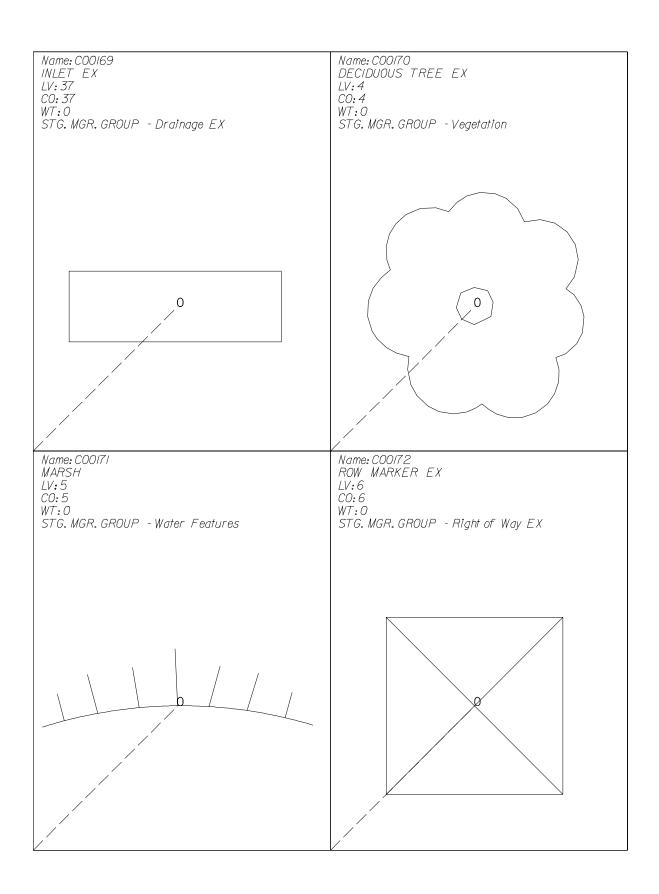


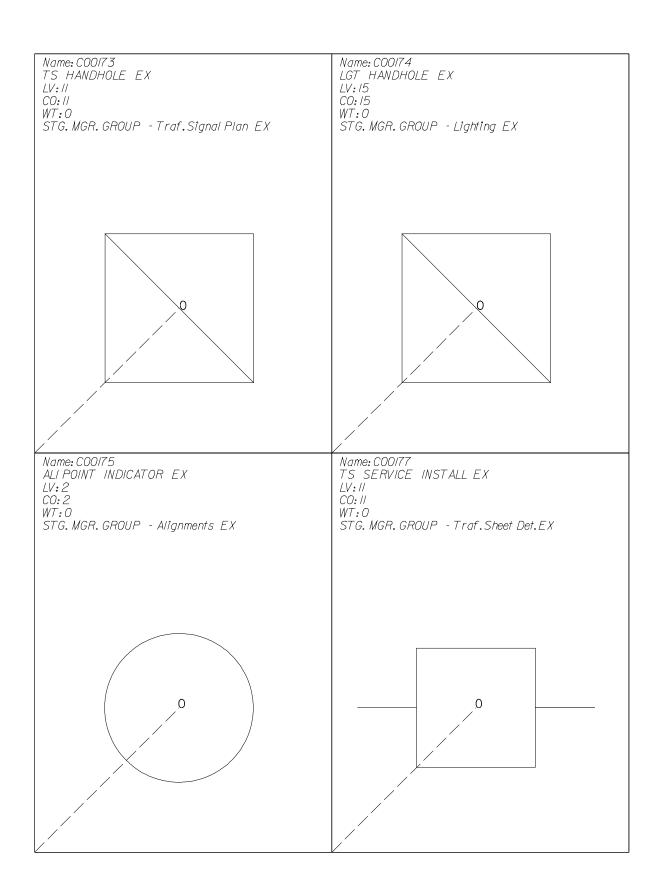


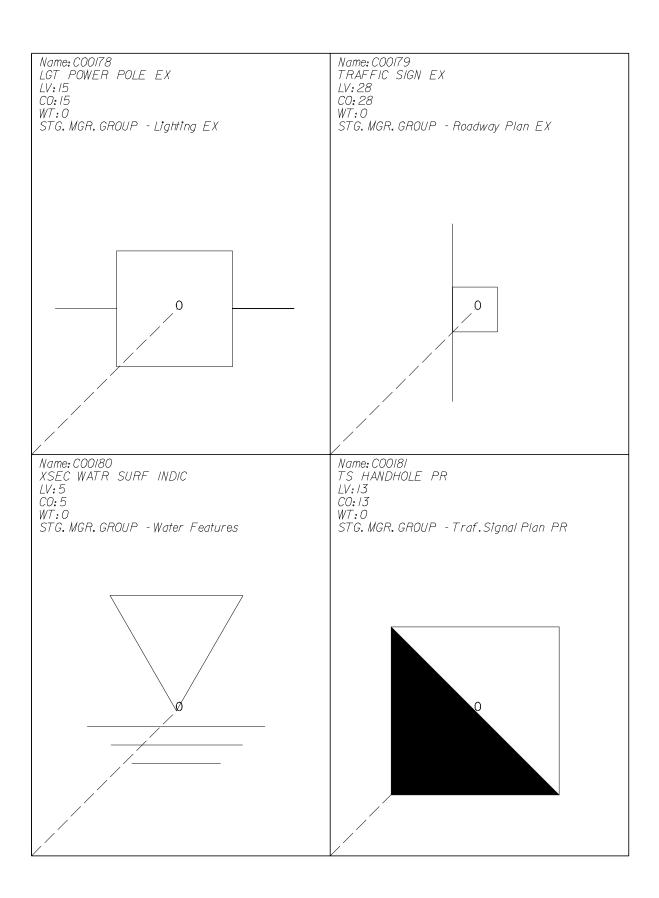


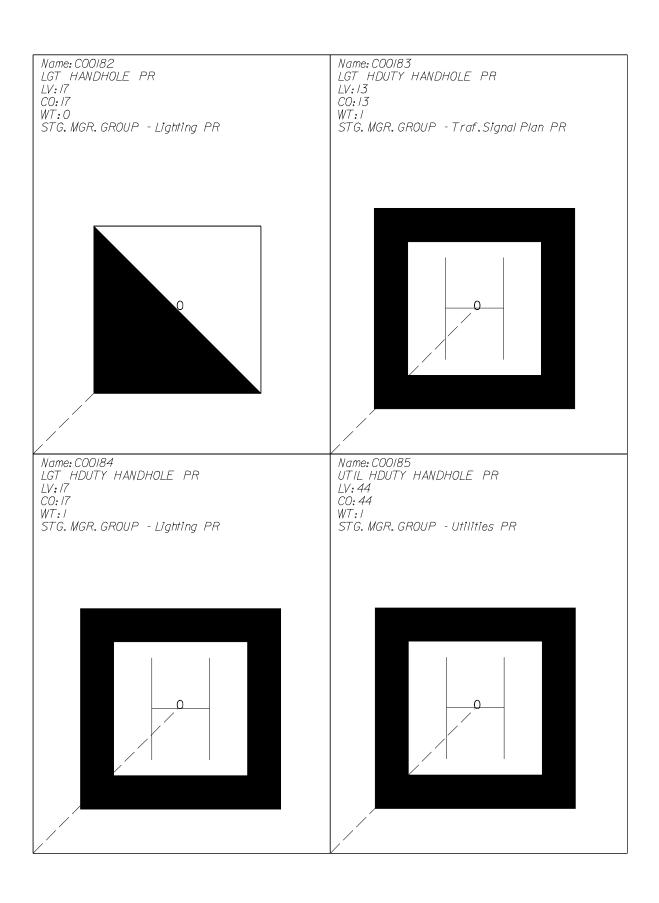


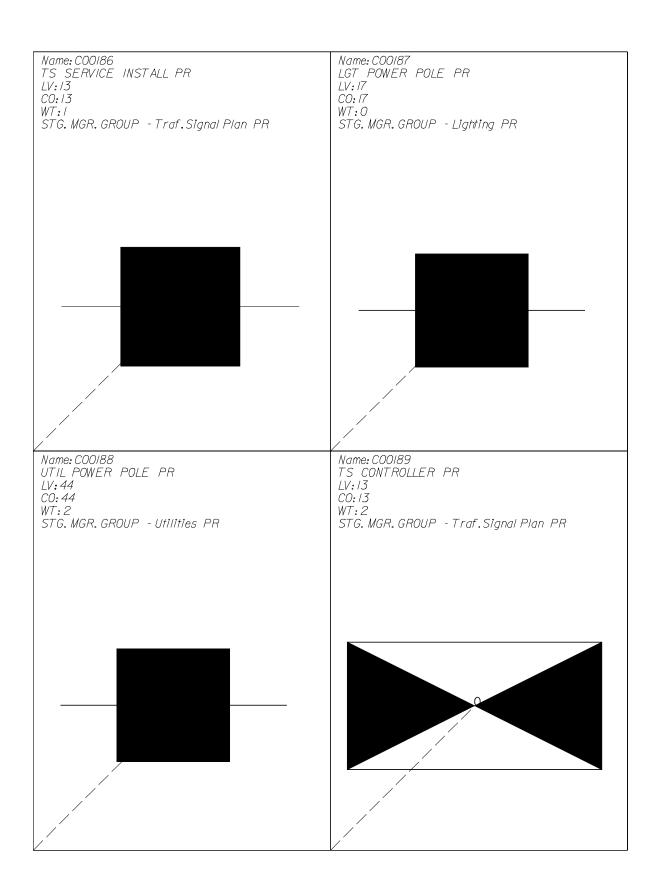


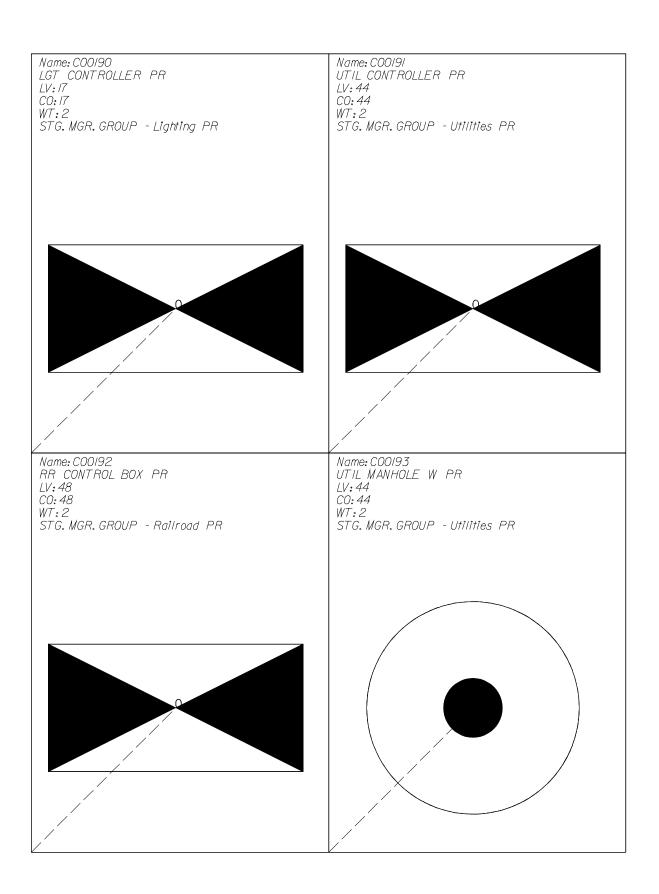


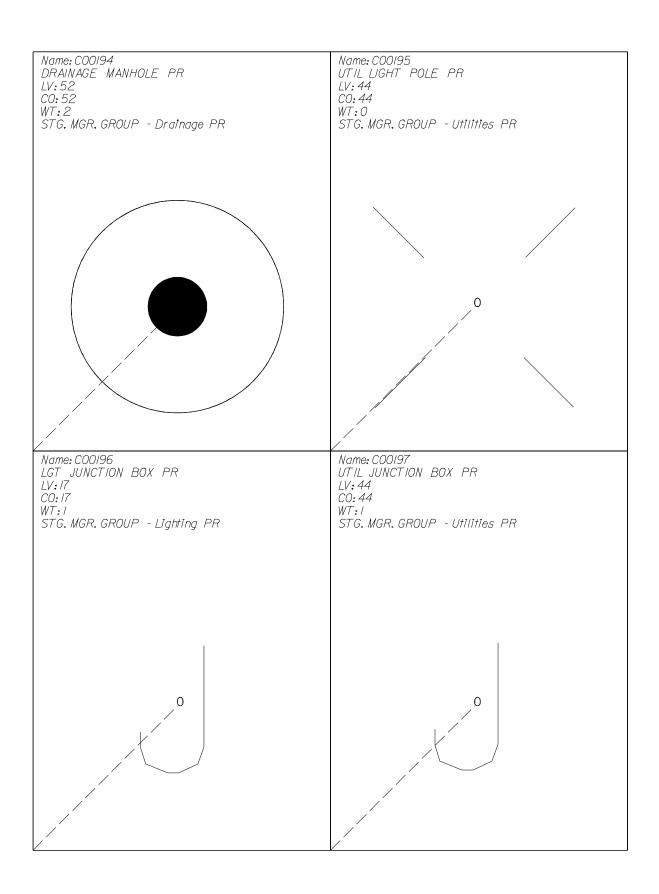


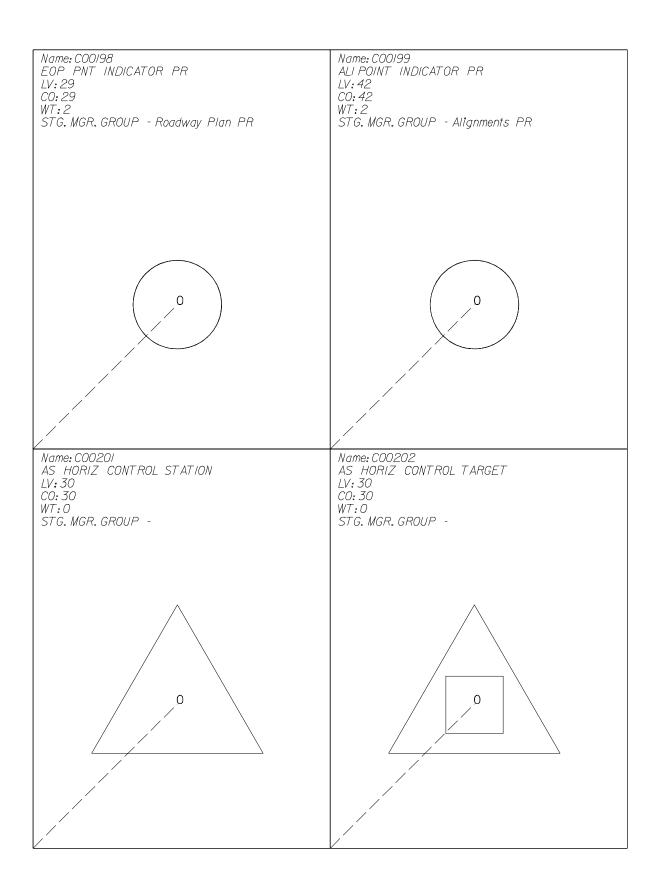


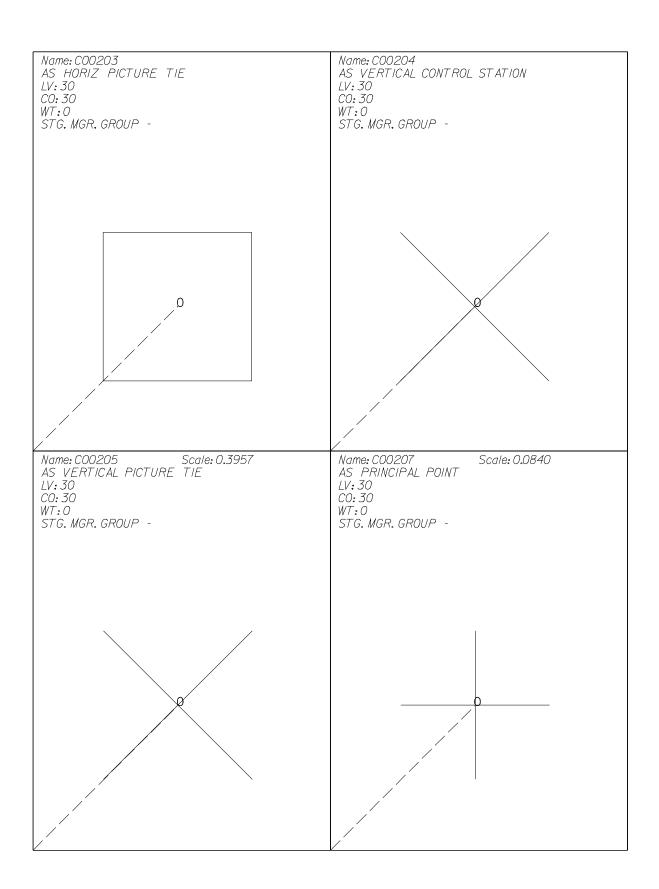


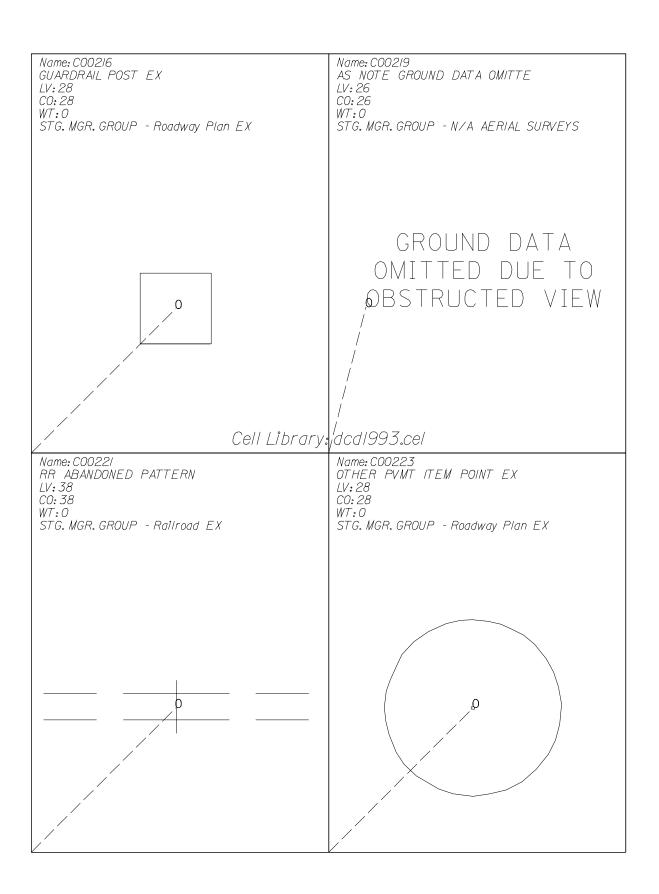




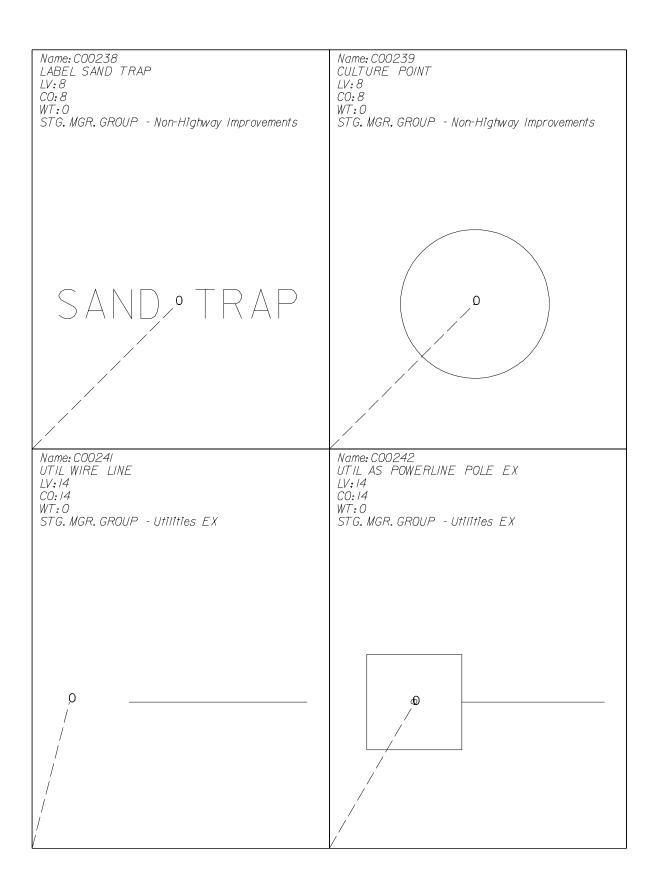


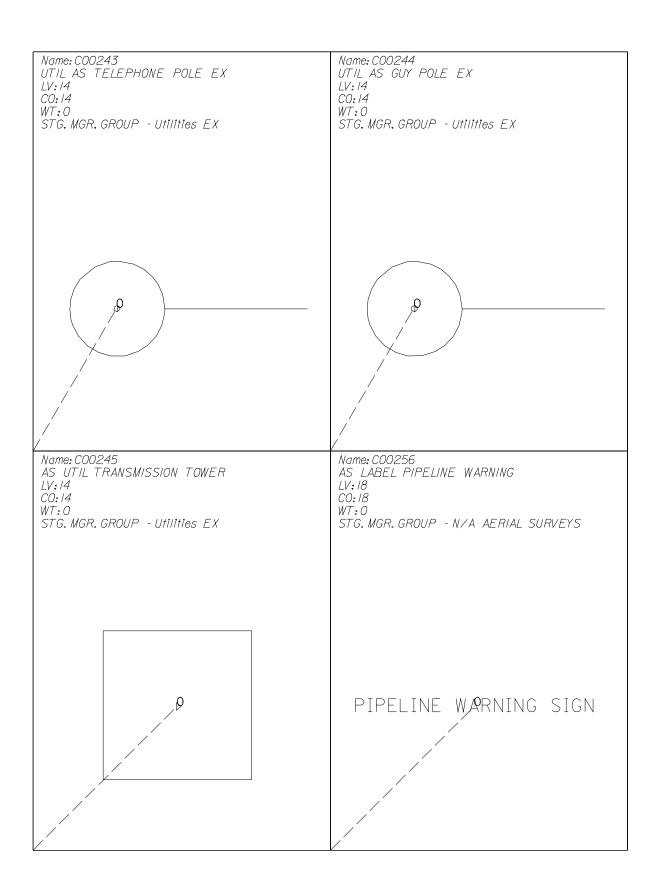


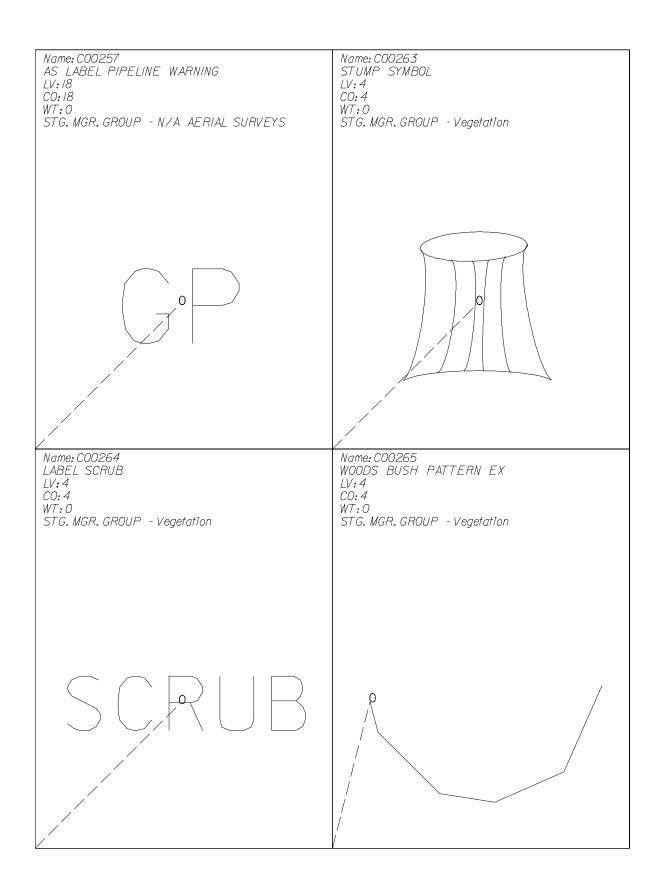


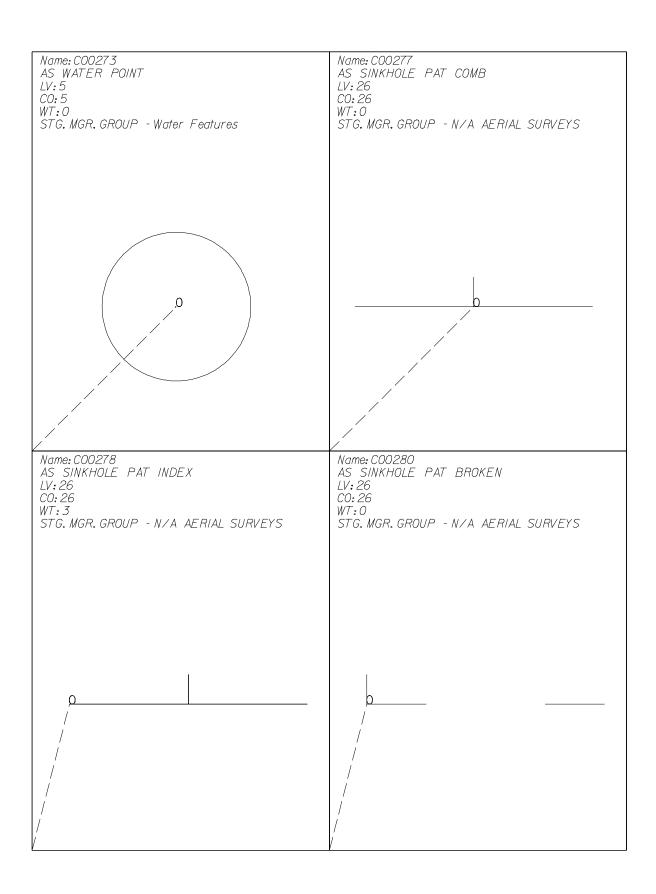


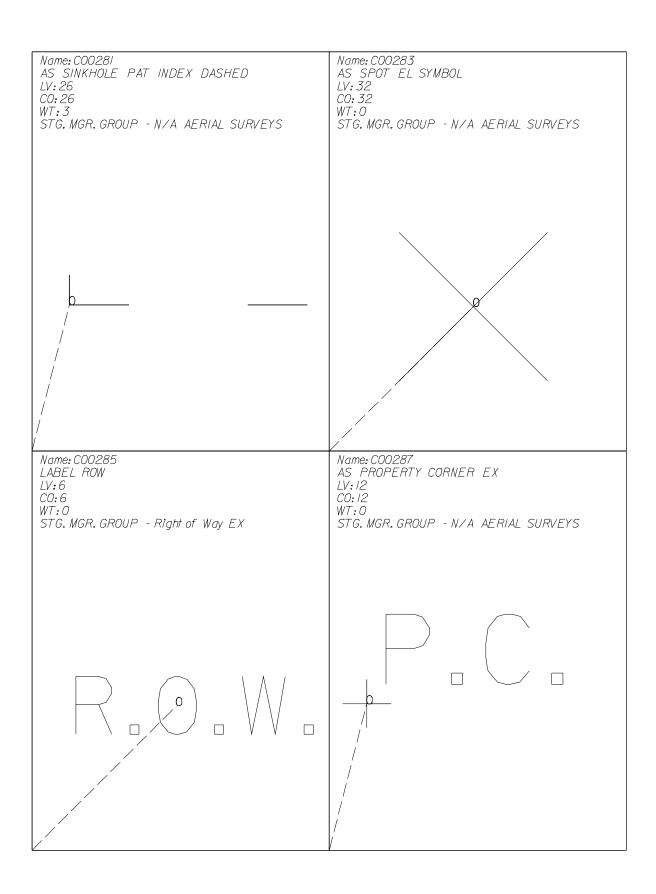
Name: C00224 MAJOR ROADS POINT EX LV: 27 C0: 27 WT: 0 STG. MGR. GROUP - Roadway Plan EX	Name: C00233 FIELD LINE SYMBOL LV: 8 C0: 8 WT: 0 STG. MGR. GROUP - Non-Highway Improvements
0	
Name 000074	N-m- 000077
Name: C00234 LABEL SWIMMING POOL LV: 8 CO: 8 WT: 0 STG. MGR. GROUP - Non-Highway Improvements	Name: C00237 LABEL GOLF GREEN LV: 8 CO: 8 WT: 0 STG. MGR. GROUP - Non-Highway Improvements
	GOLF GREEN

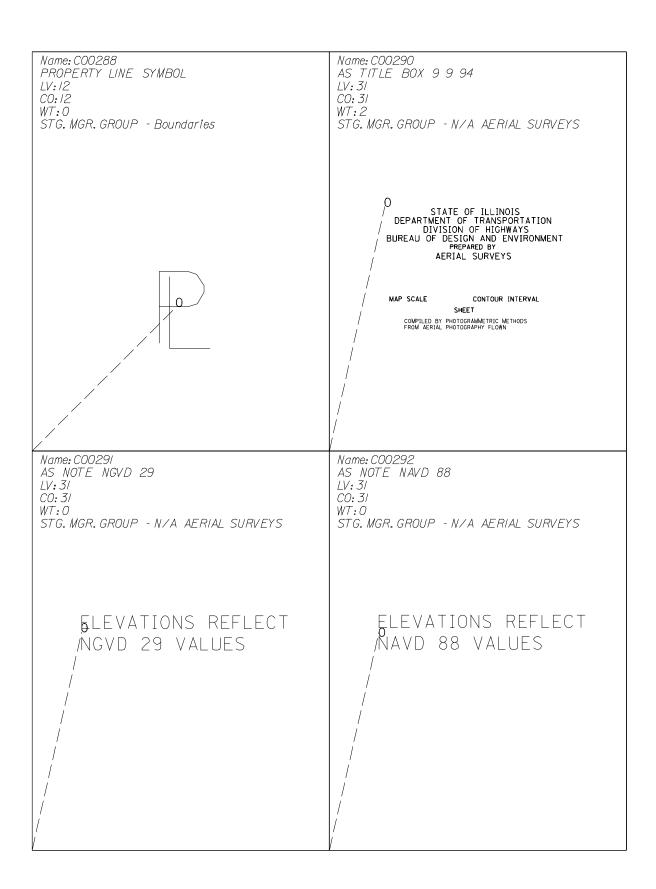


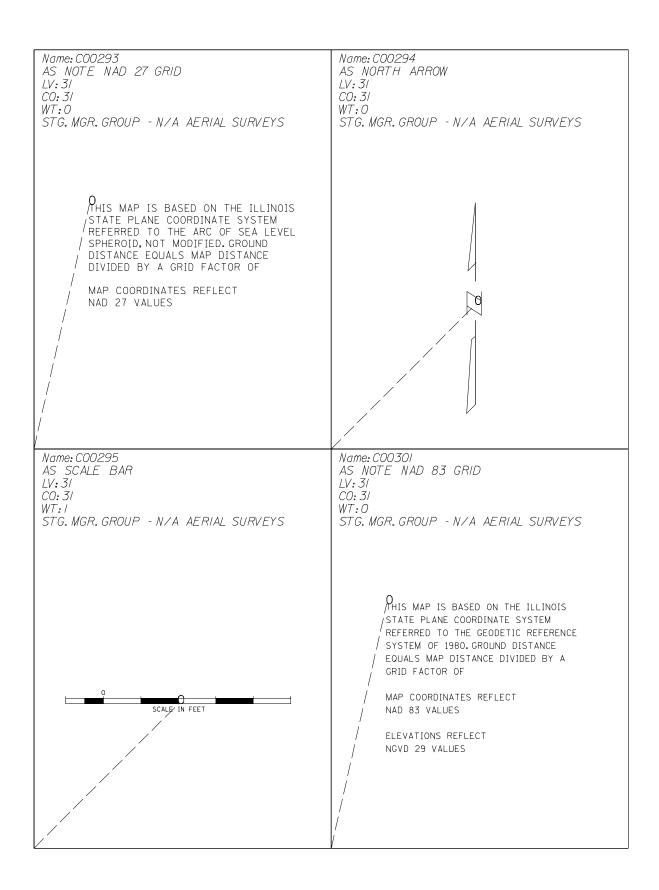


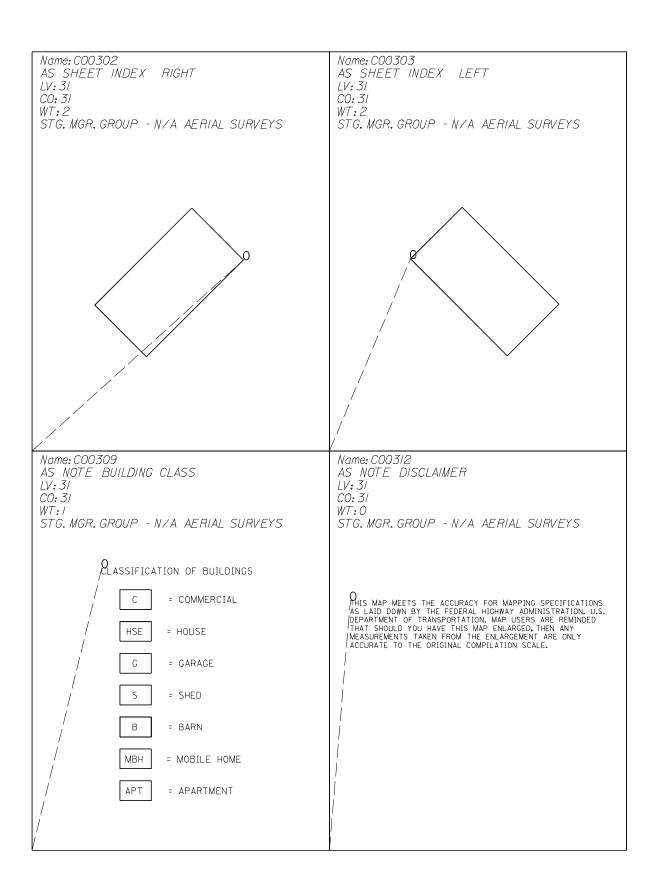


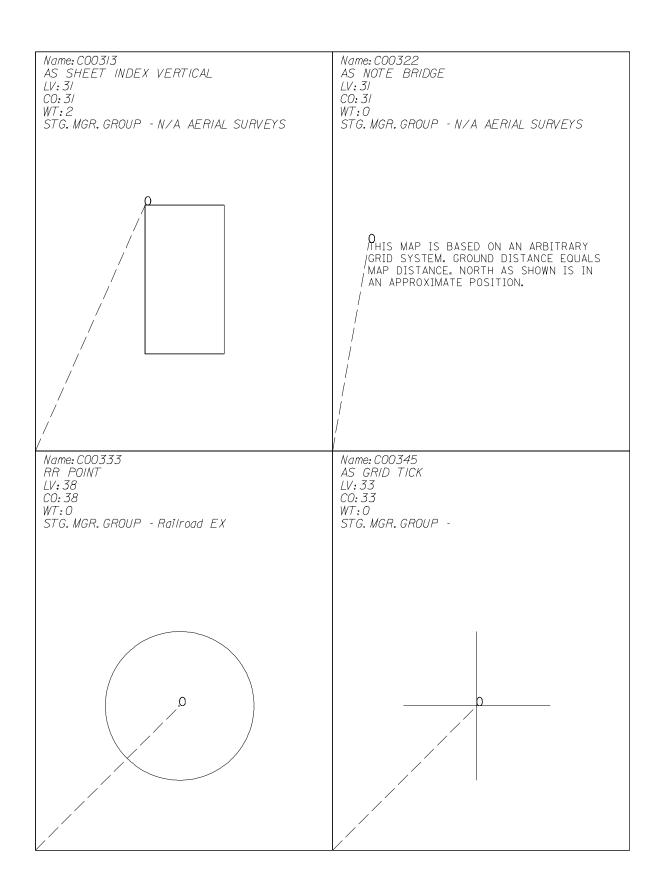


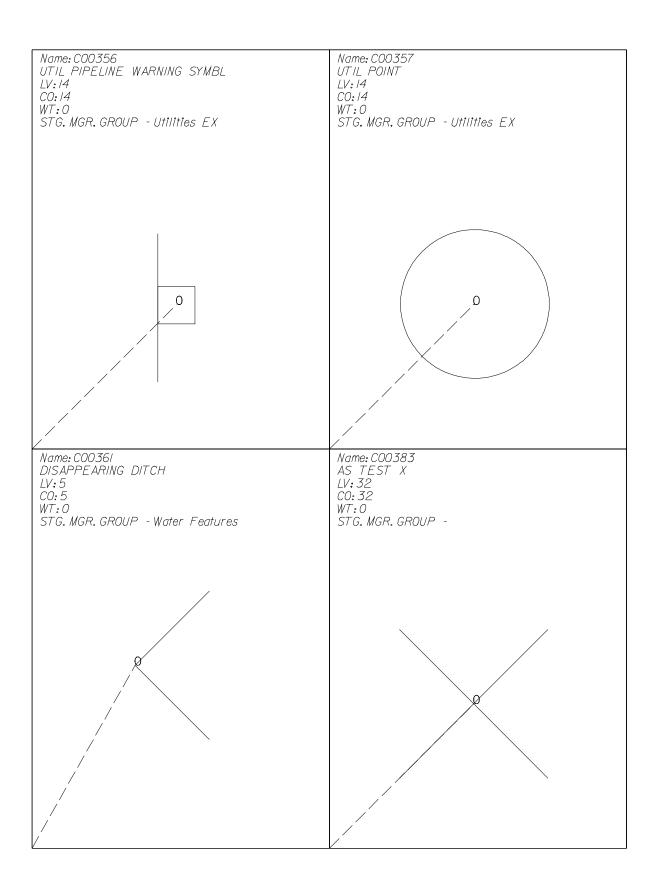


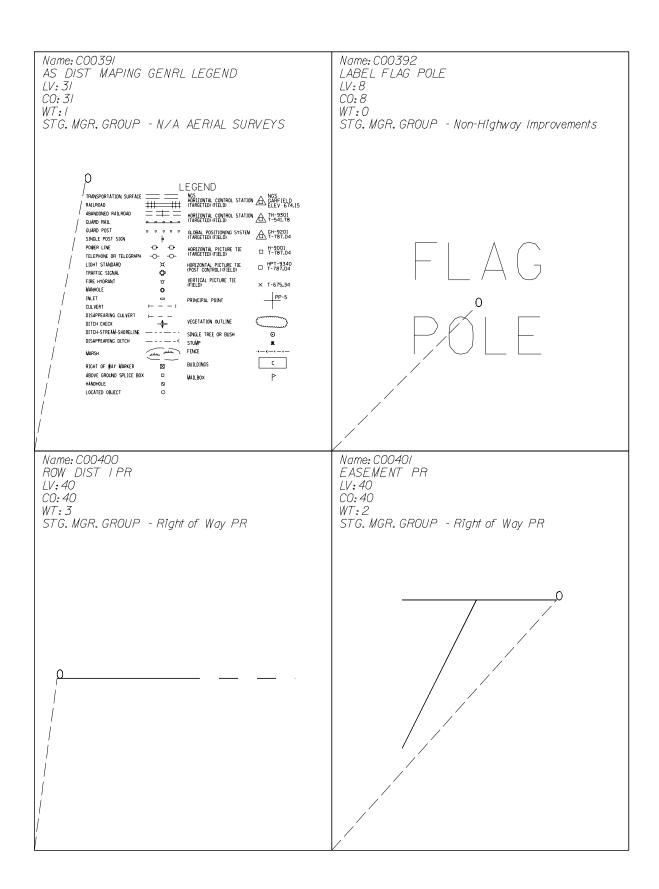


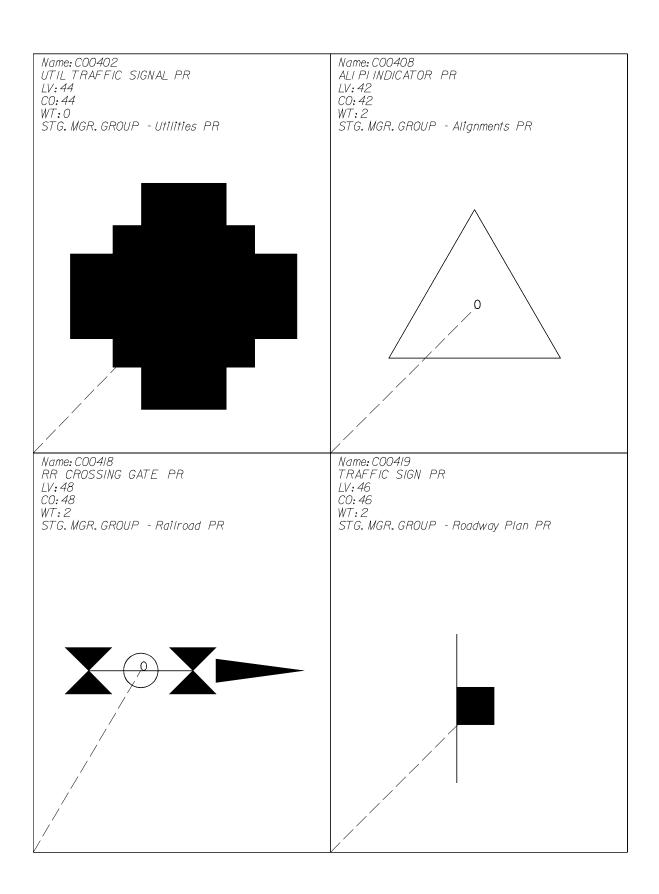


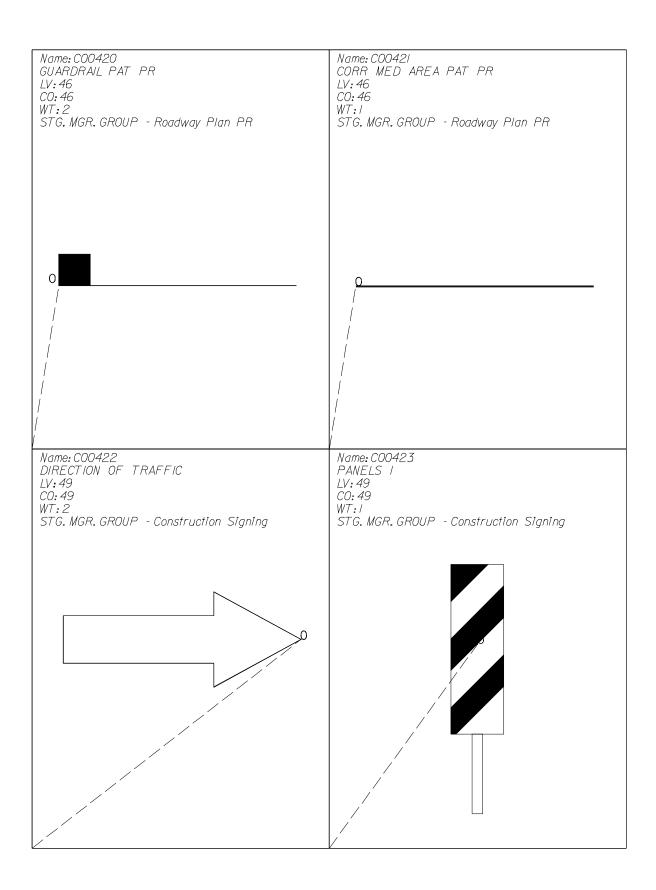


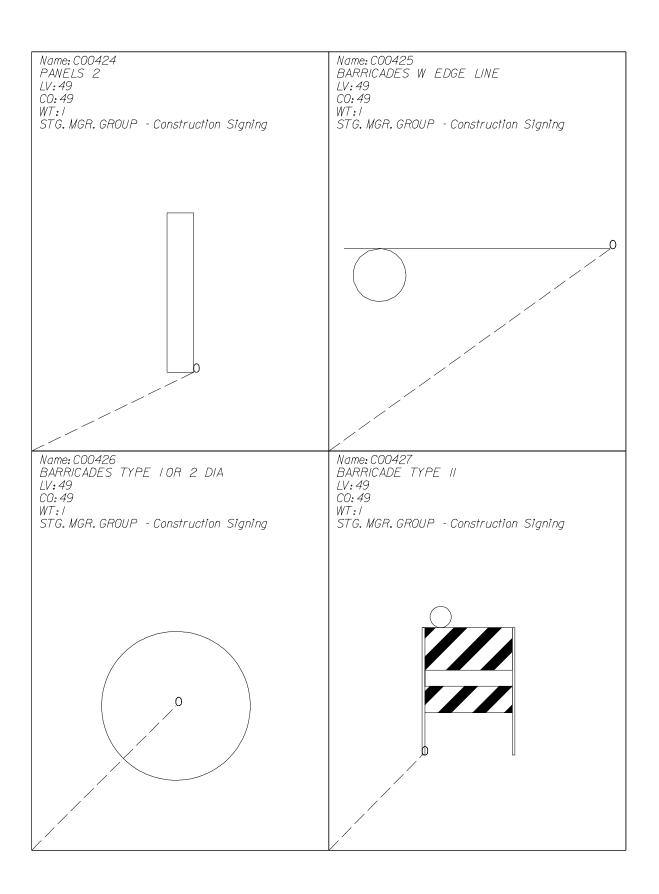


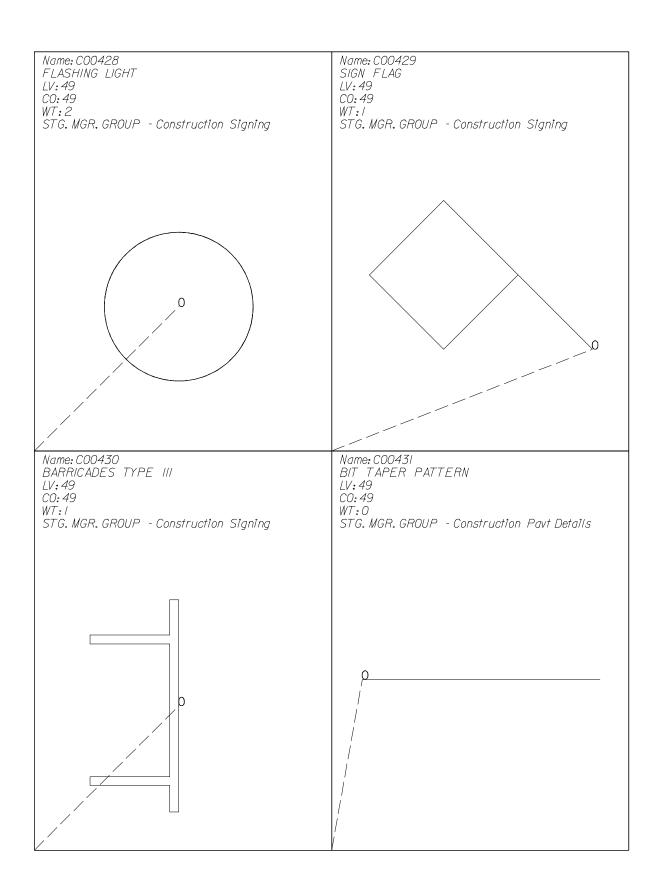


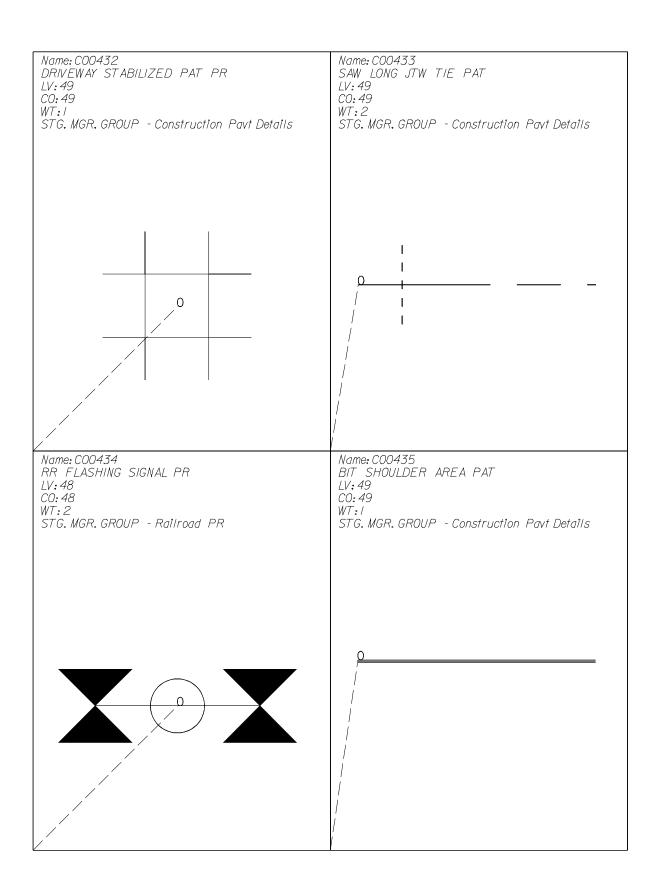


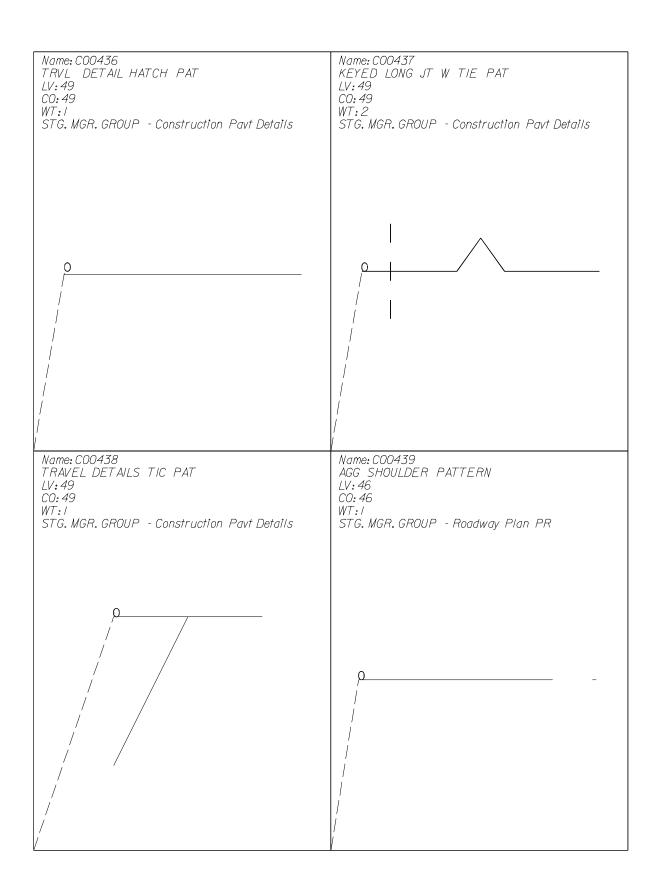


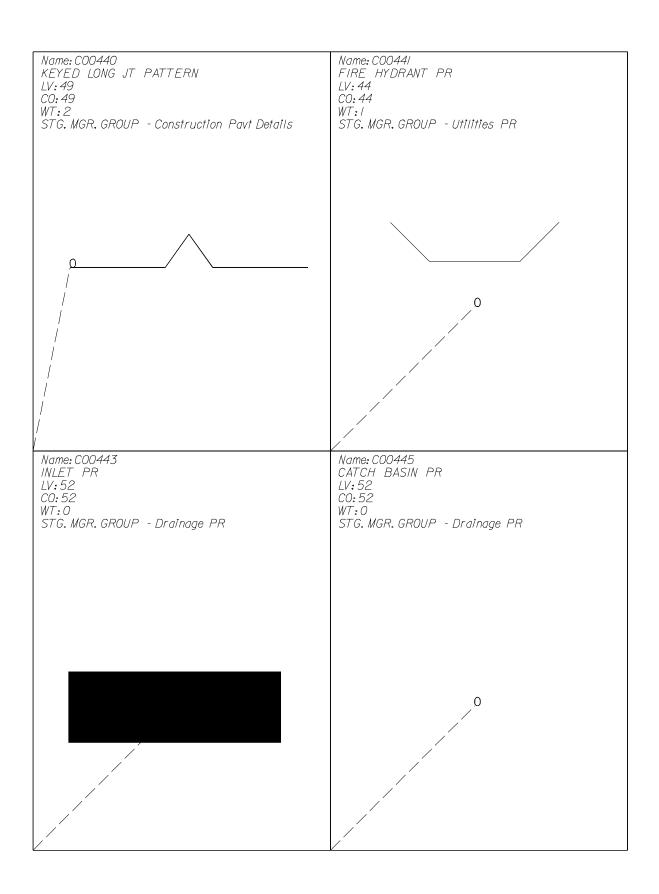


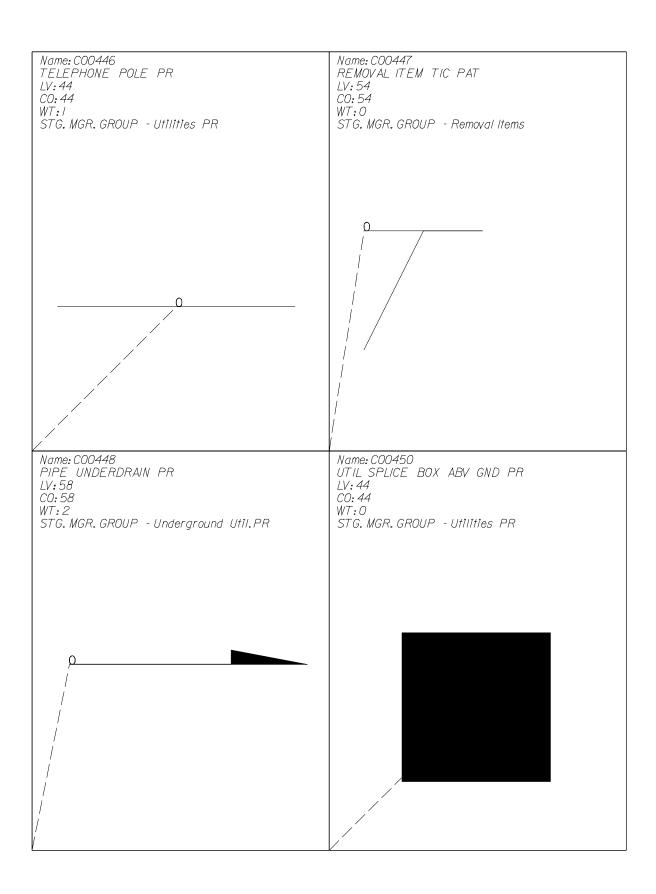


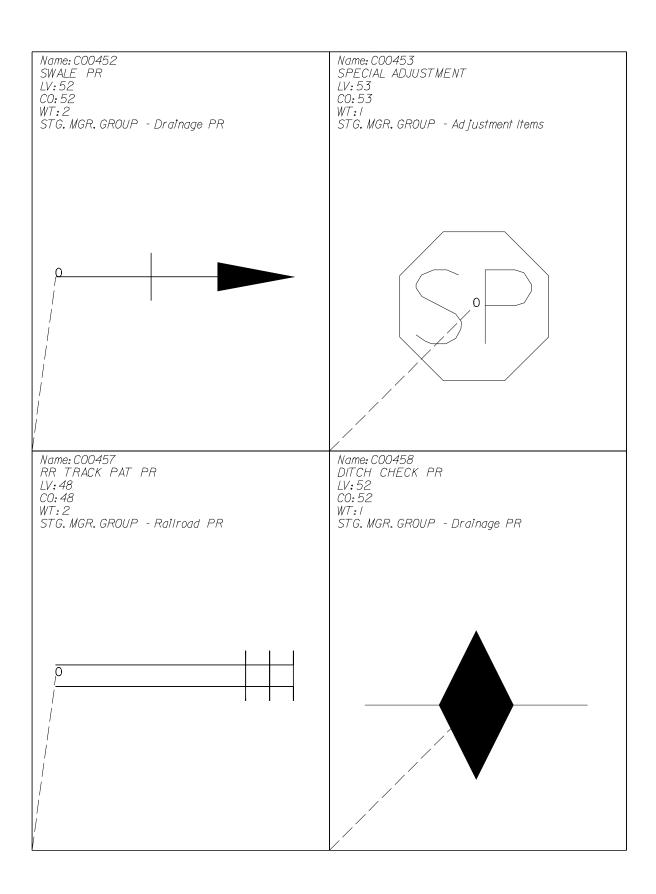


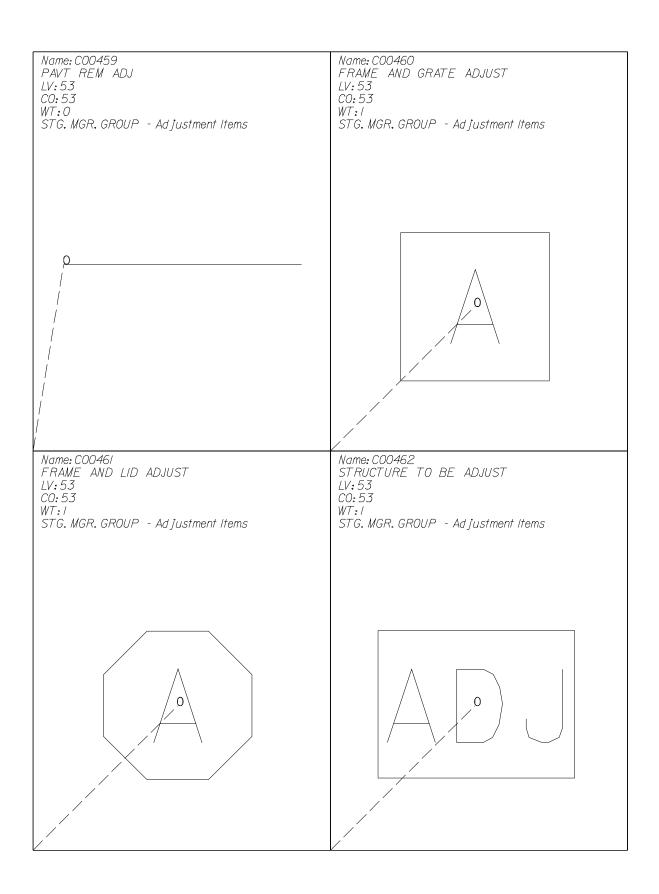


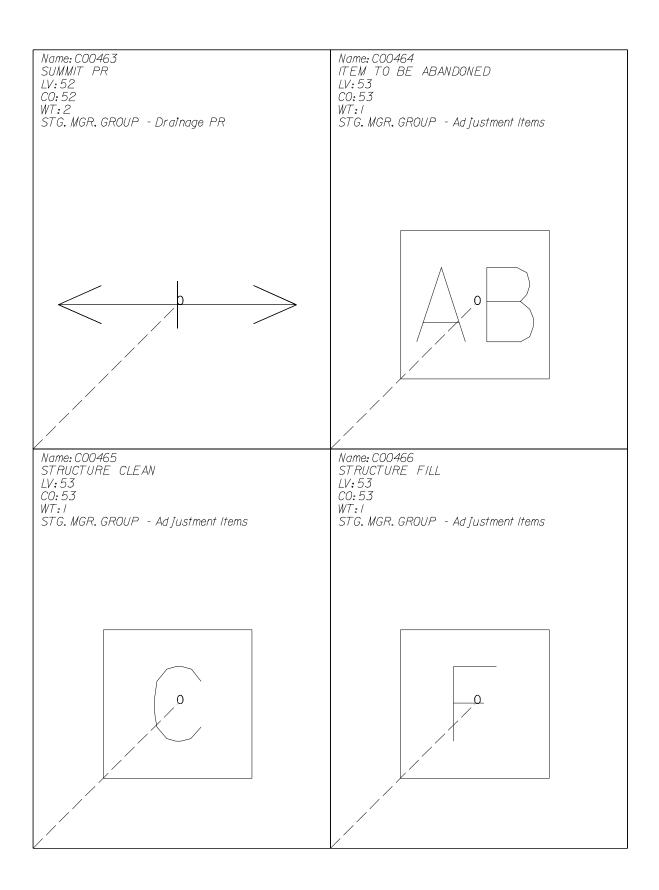


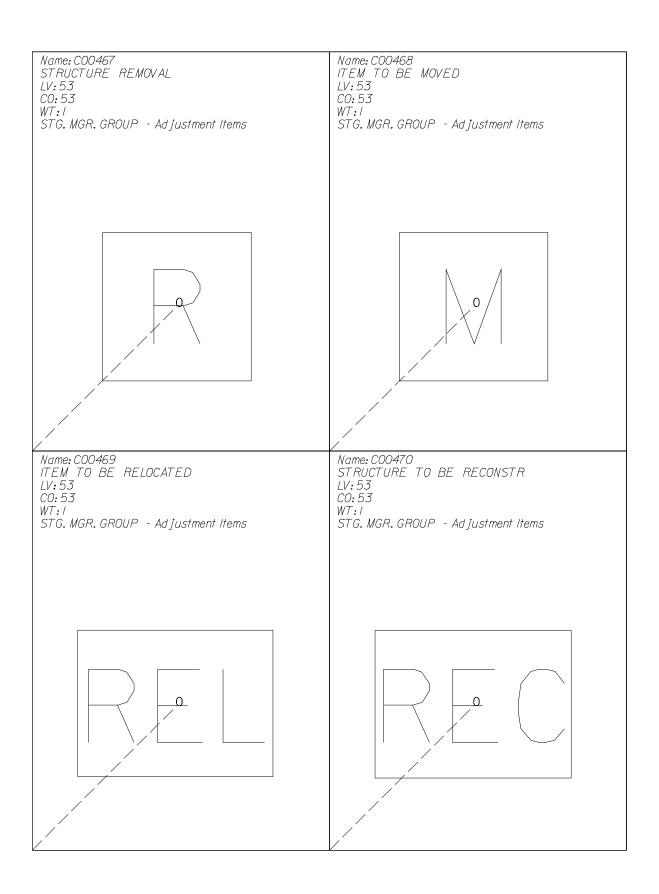


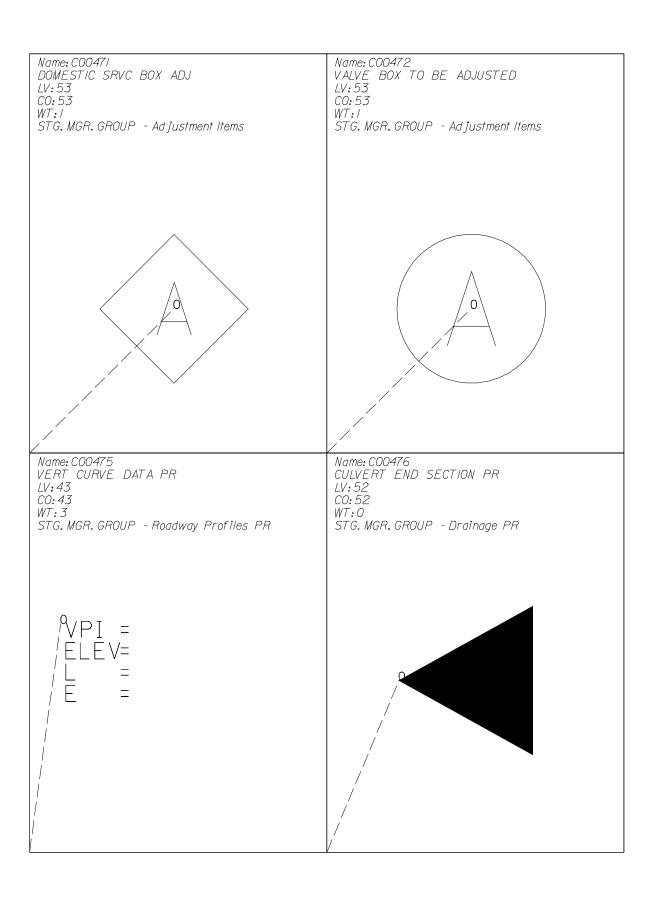


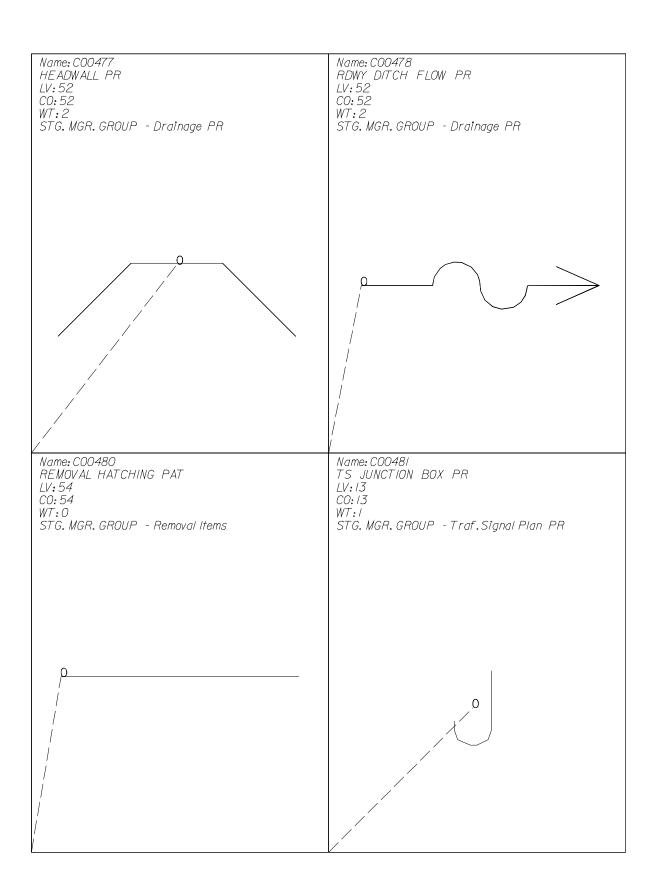


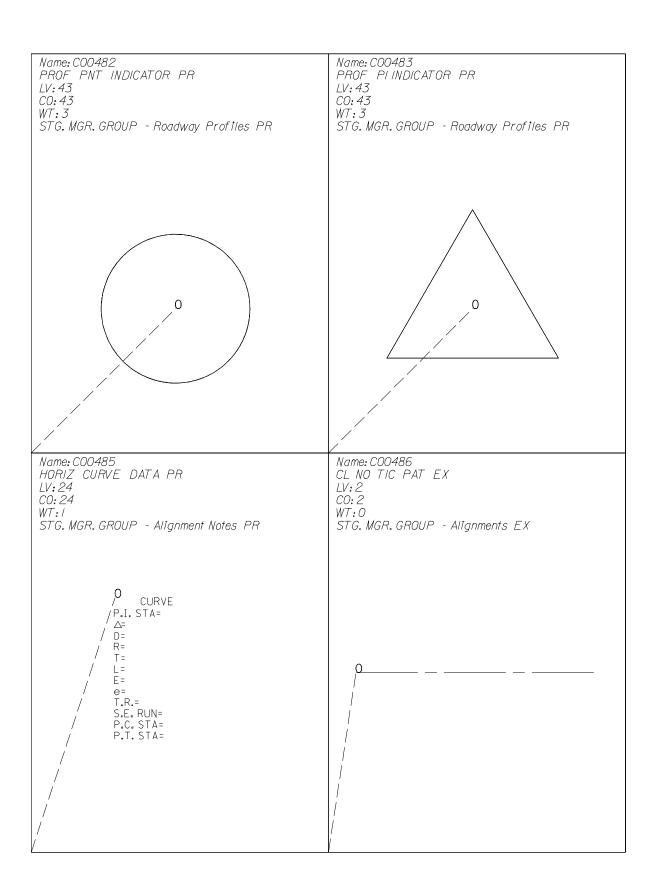


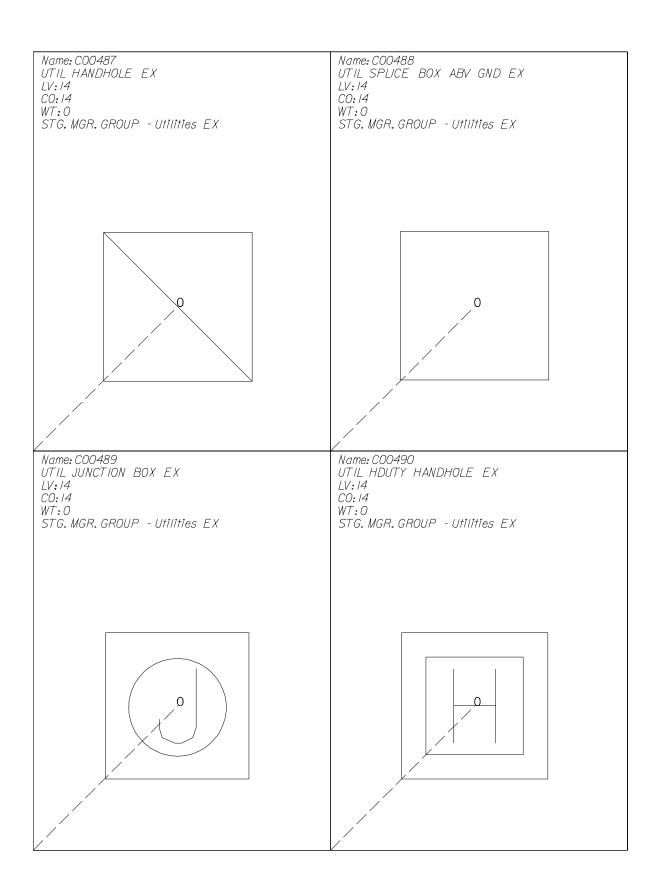


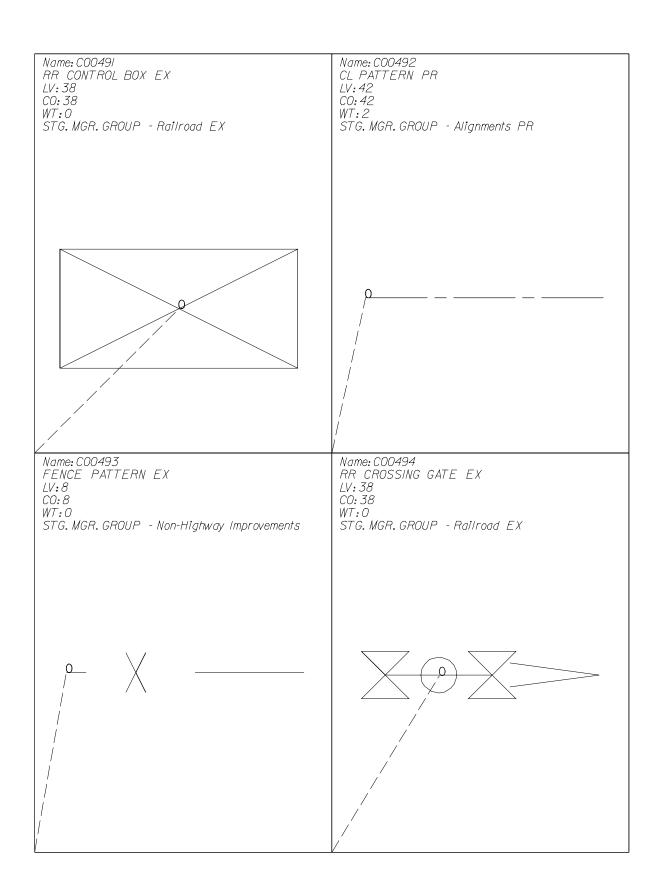


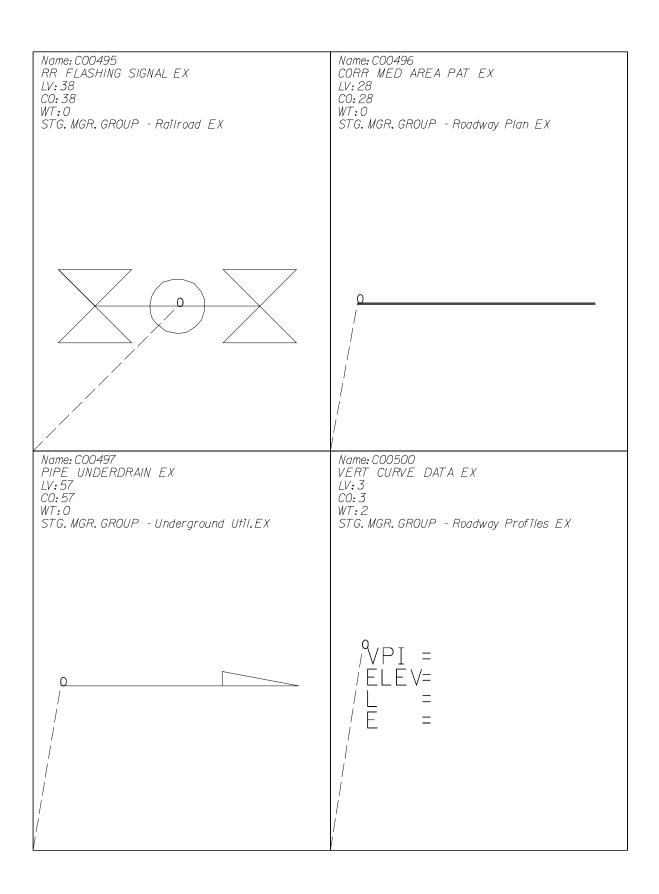


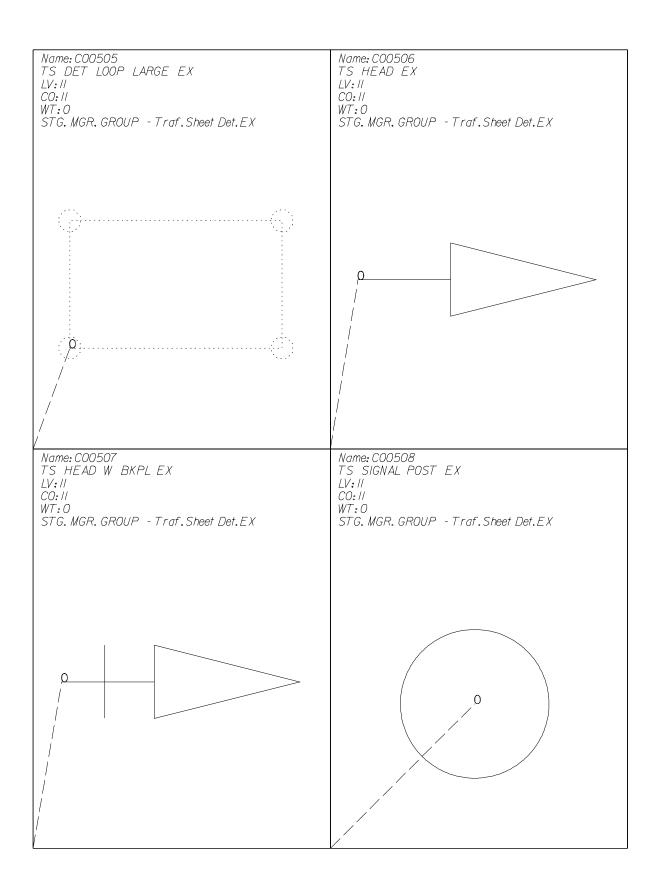


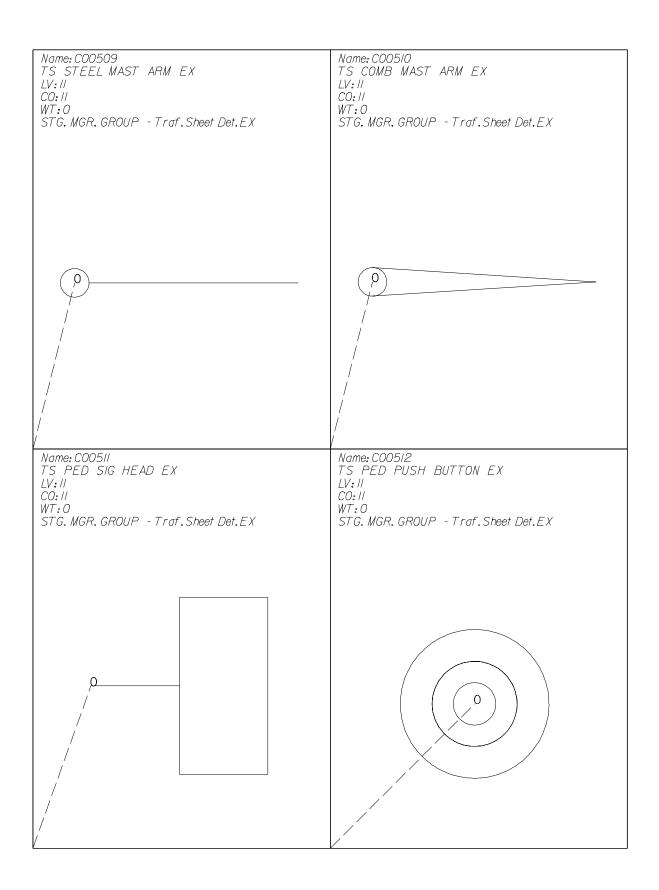


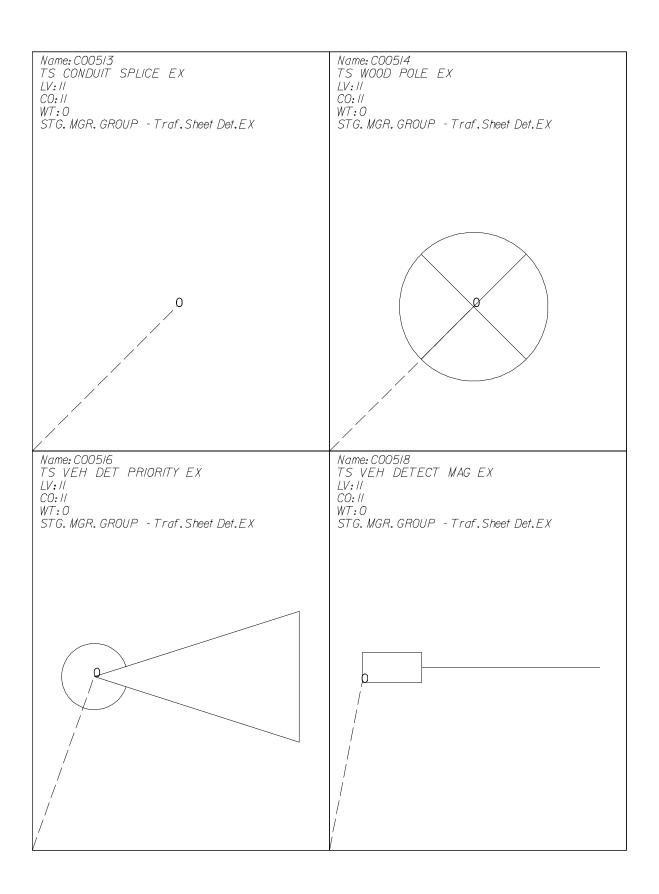


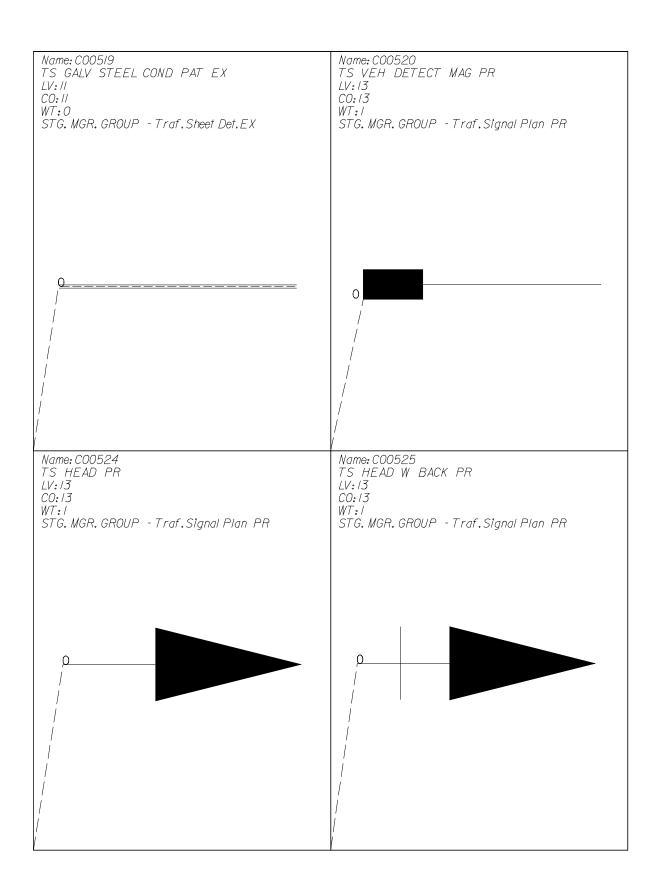


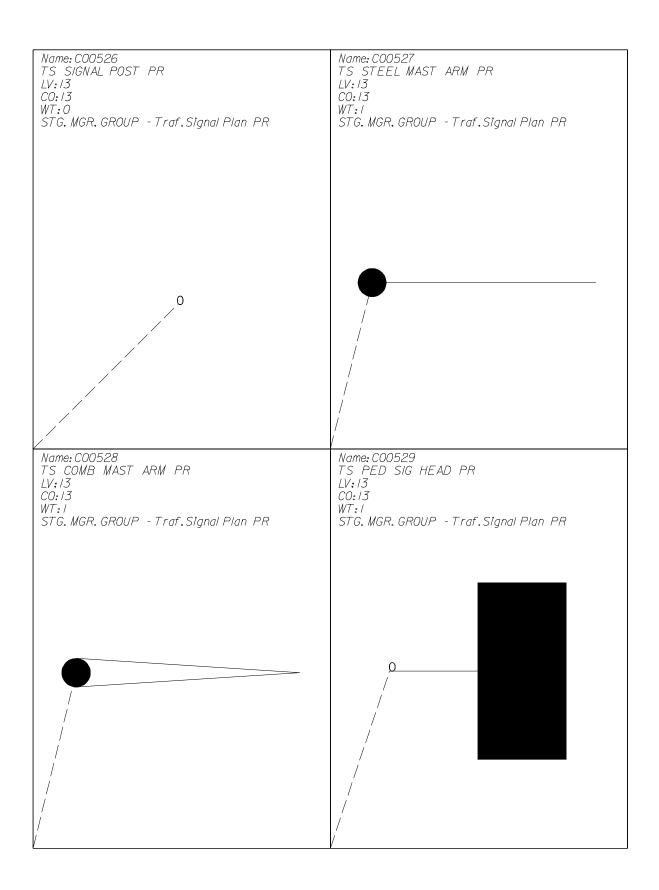


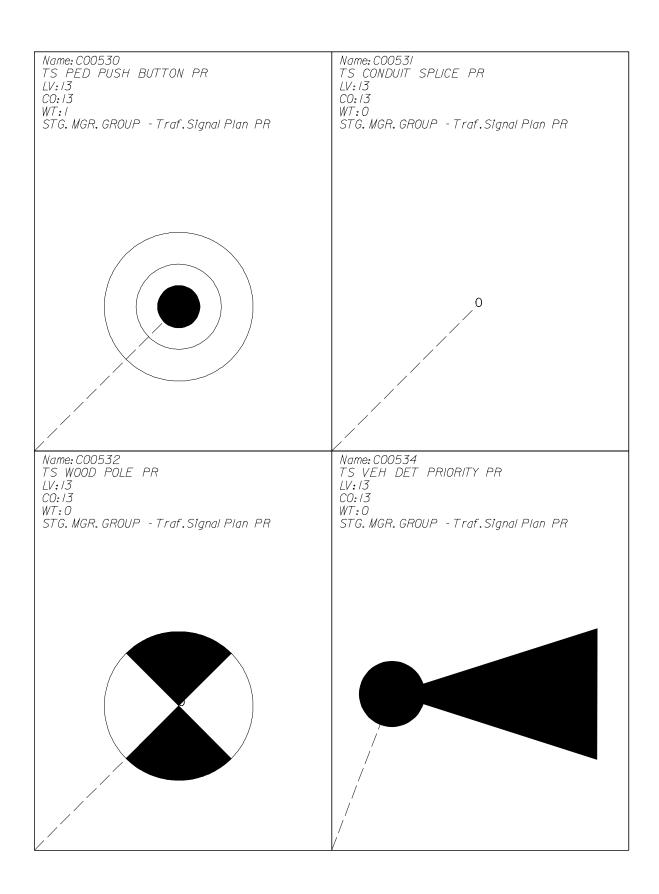




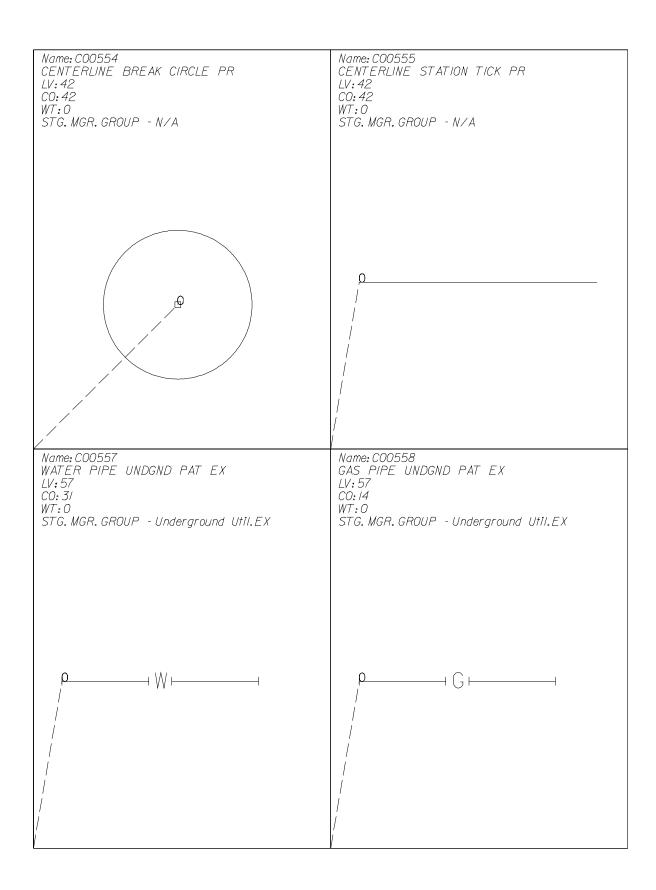




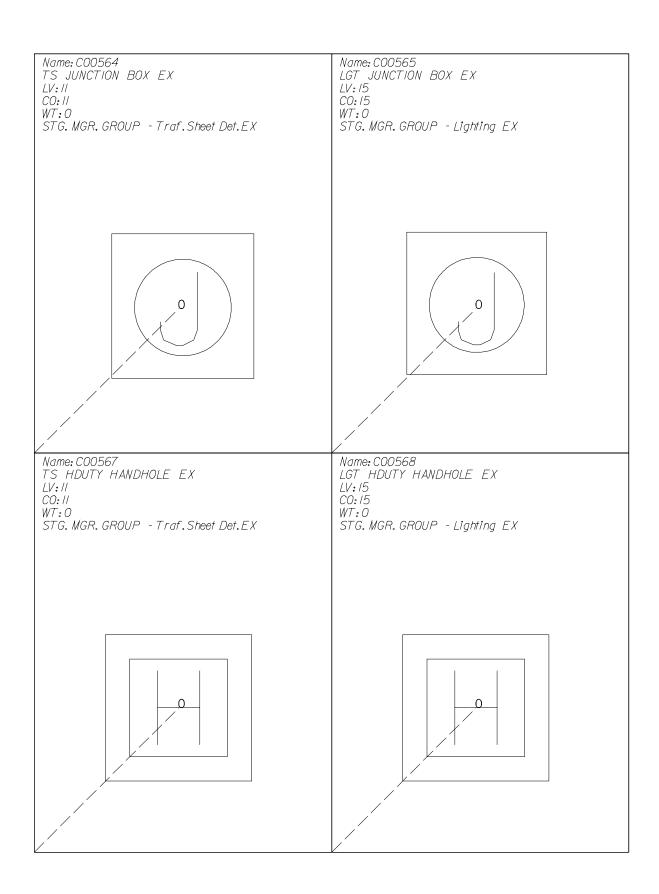


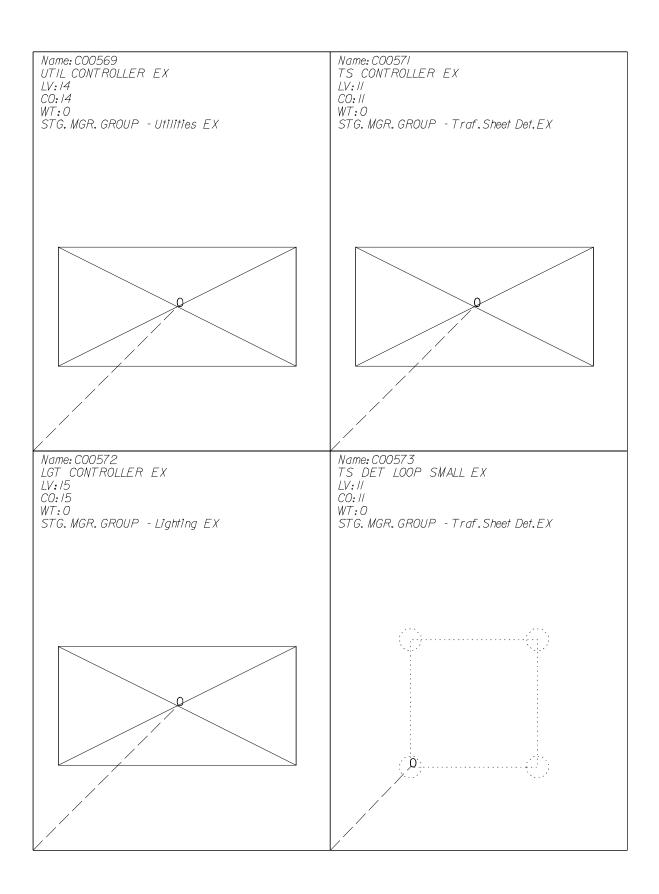


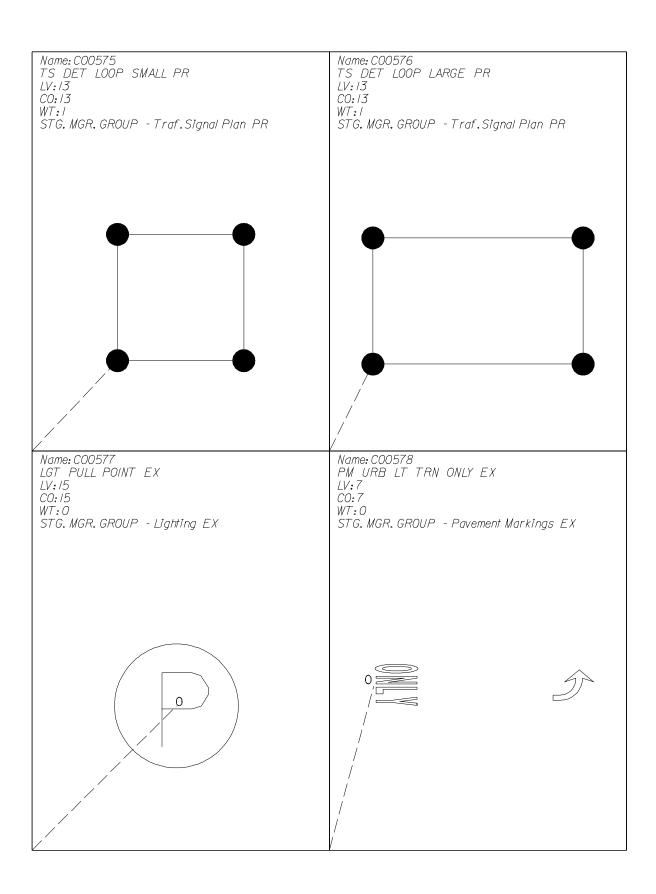
Name: C00550 TEL UNDGND PAT EX LV: 57 CO: 20 WT: 0 STG. MGR. GROUP - Underground Util.EX	Name: C0055I ELECTRIC UNDGND PAT EX LV: 57 C0: 2 WT: 0 STG. MGR. GROUP - Underground Util.EX
Name: C00552 TEL UNDGND PAT PR LV: 58 C0: 20 WT: 2 STG. MGR. GROUP - Underground Util.PR	Name: C00553 ELEC UNDGND PAT PR LV: 58 CO: 2 WT: 2 STG. MGR. GROUP - Underground Util.PR

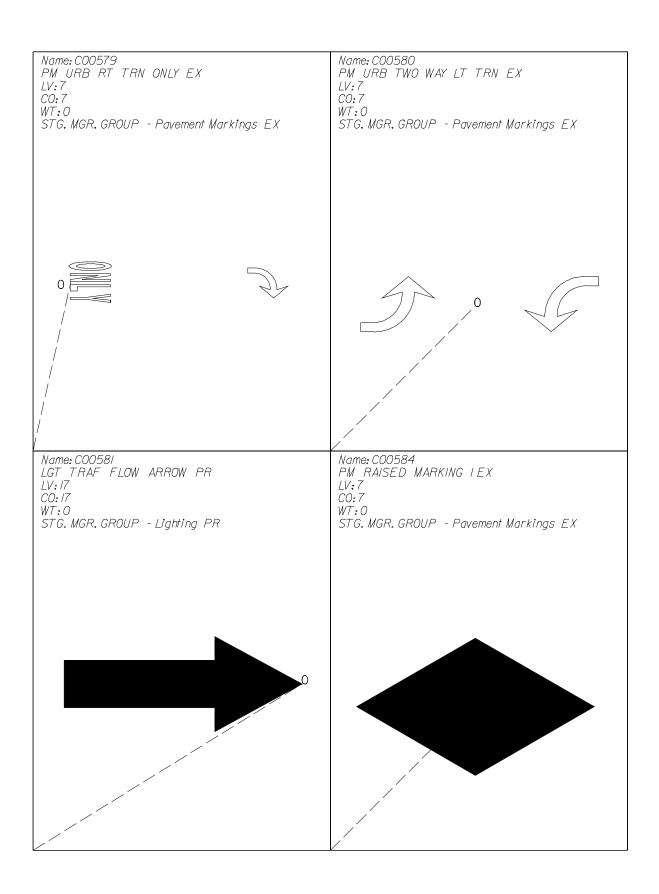


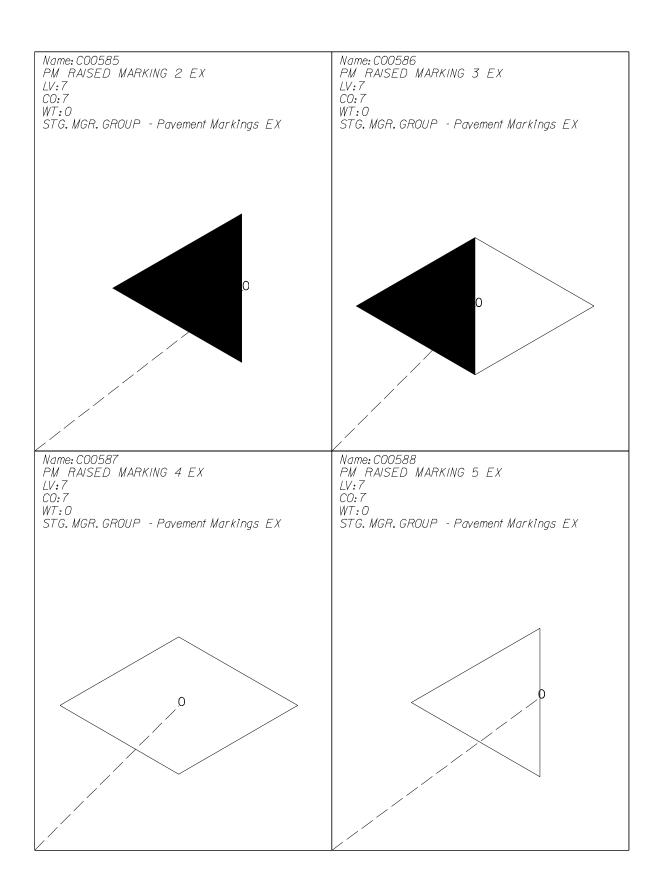
Name: C00559 OIL PIPE UNDGND PAT EX LV: 57 C0: 49 WT: 0 STG. MGR. GROUP - Underground Util. EX	Name: C00560 WATER PIPE UNDGND PAT PR LV: 58 C0: 31 WT: 2 STG. MGR. GROUP - Underground Util.PR
P	р —
Name: C00561 GAS PIPE UNDGND PAT PR LV: 58 CO: 14 WT: 2 STG. MGR. GROUP - Underground Util.PR	Name: C00562 OIL PIPE UNDGND PAT PR LV: 58 C0: 49 WT: 2 STG. MGR. GROUP - Underground Util.PR
P G	

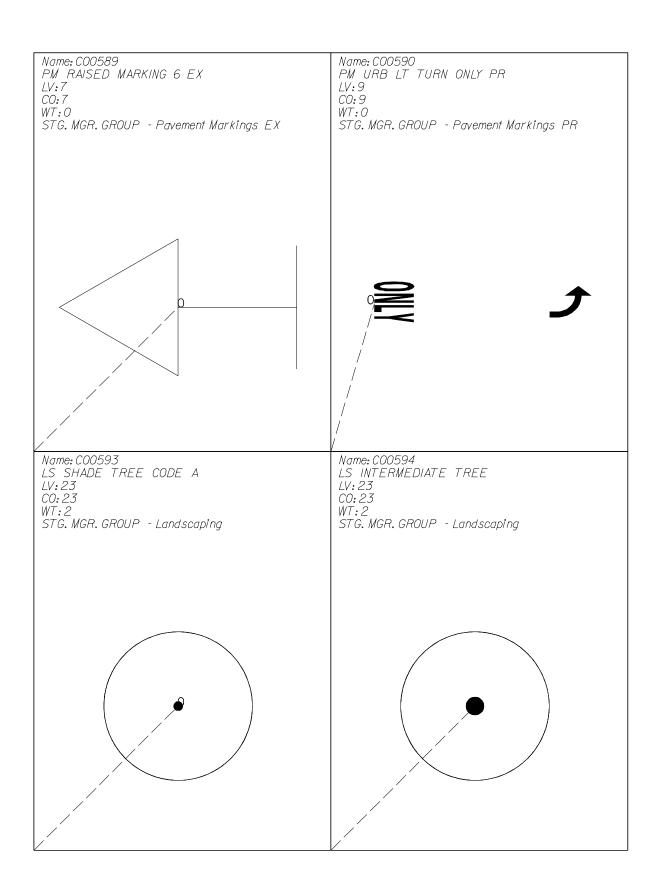


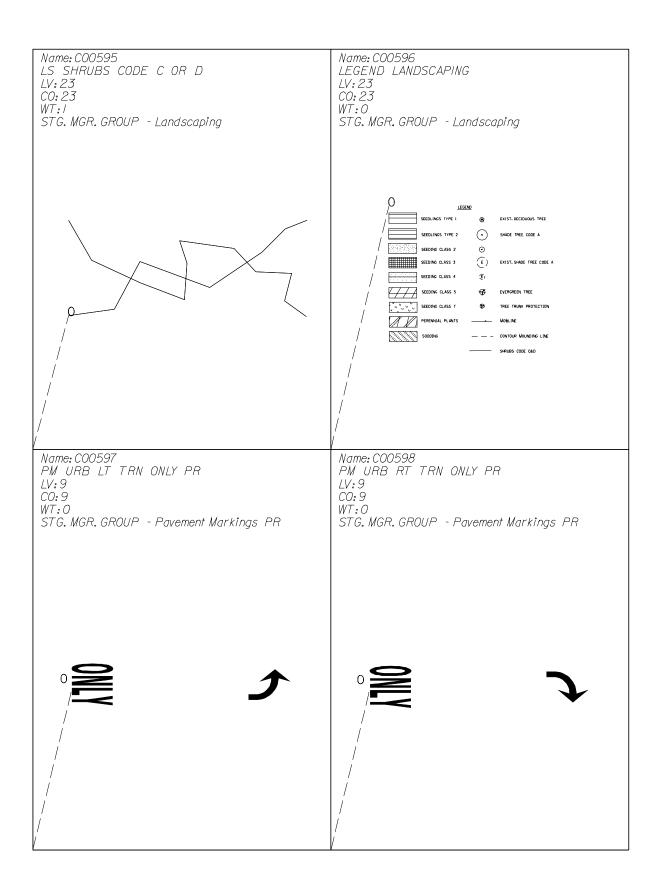


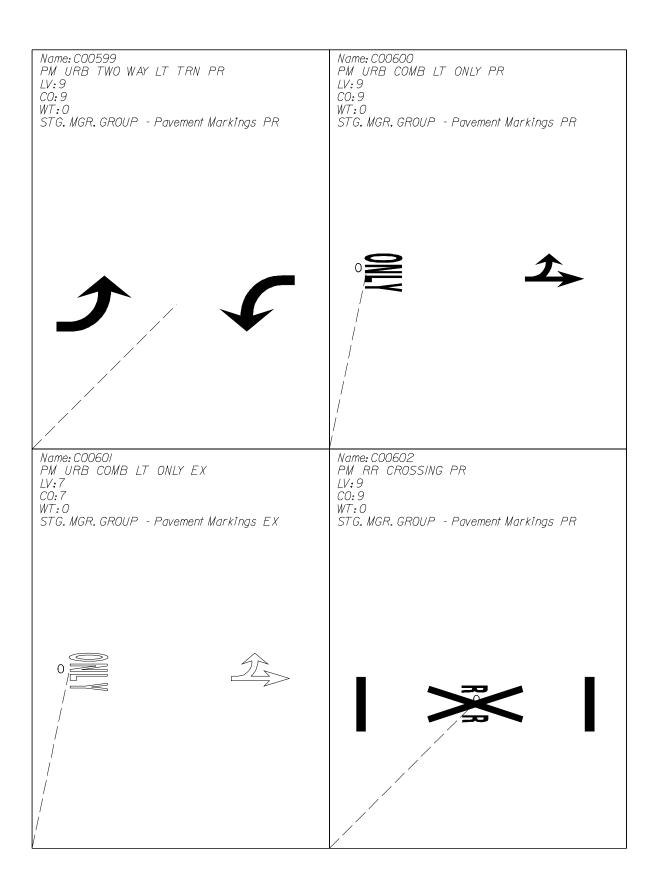


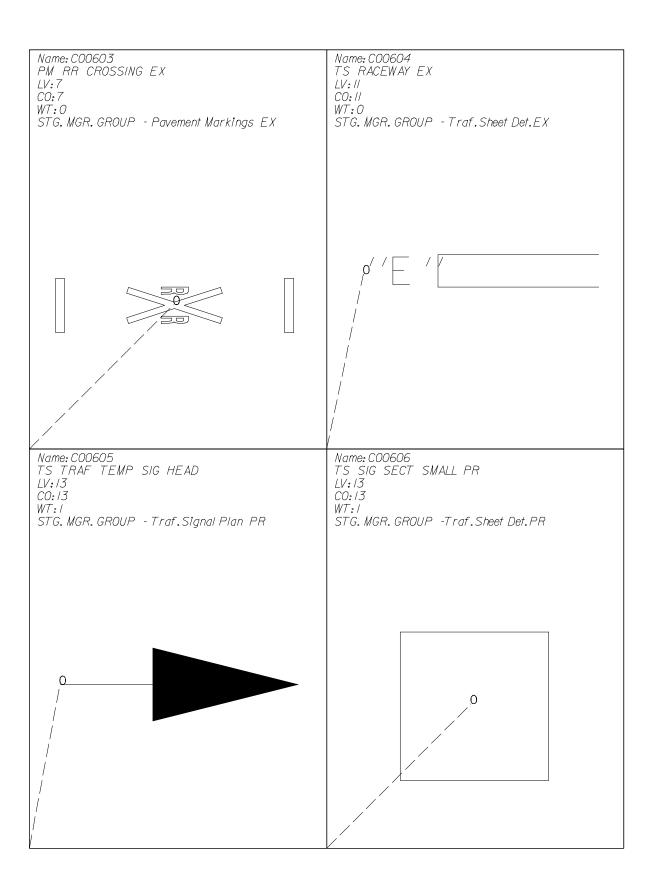


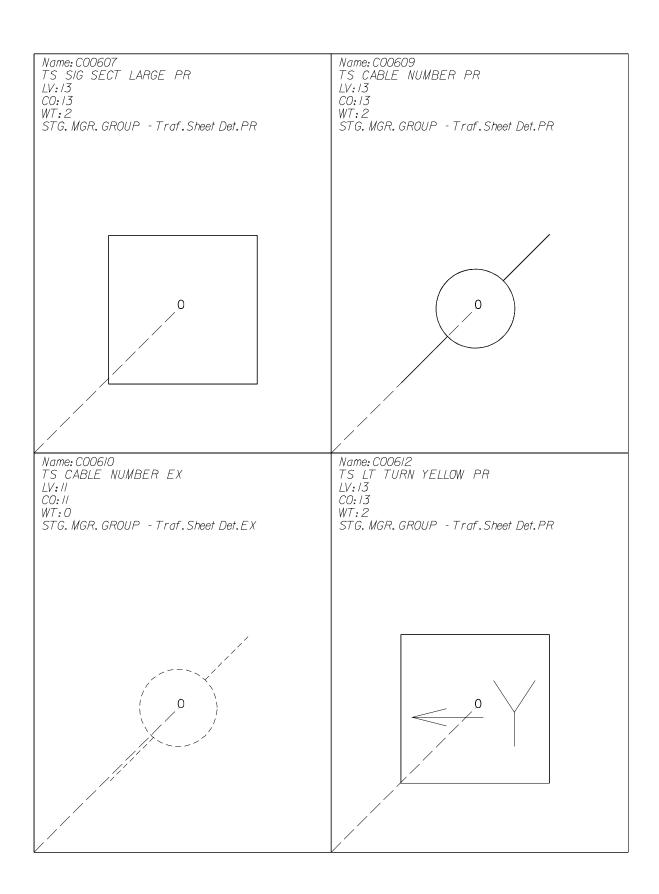


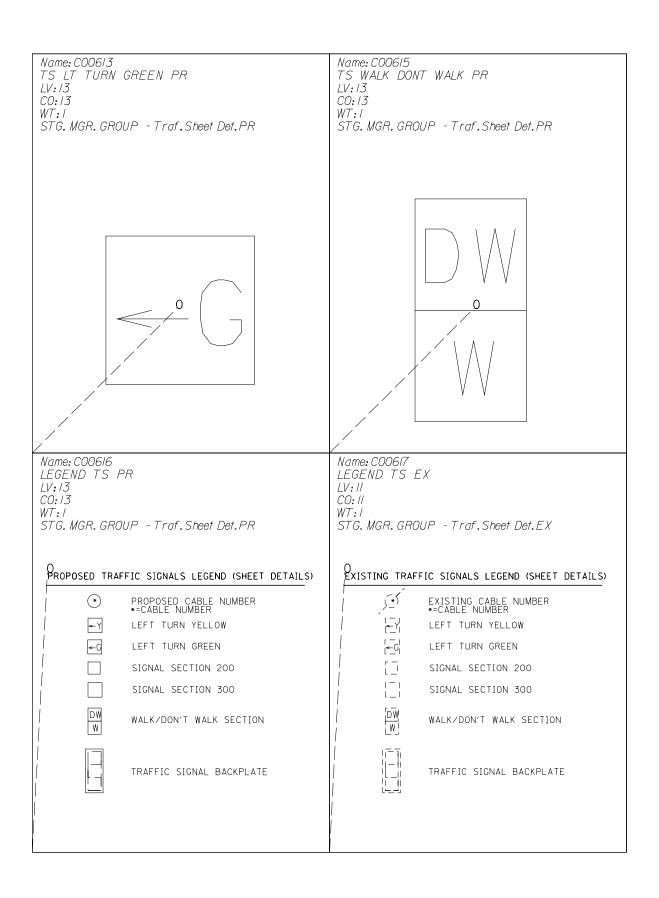


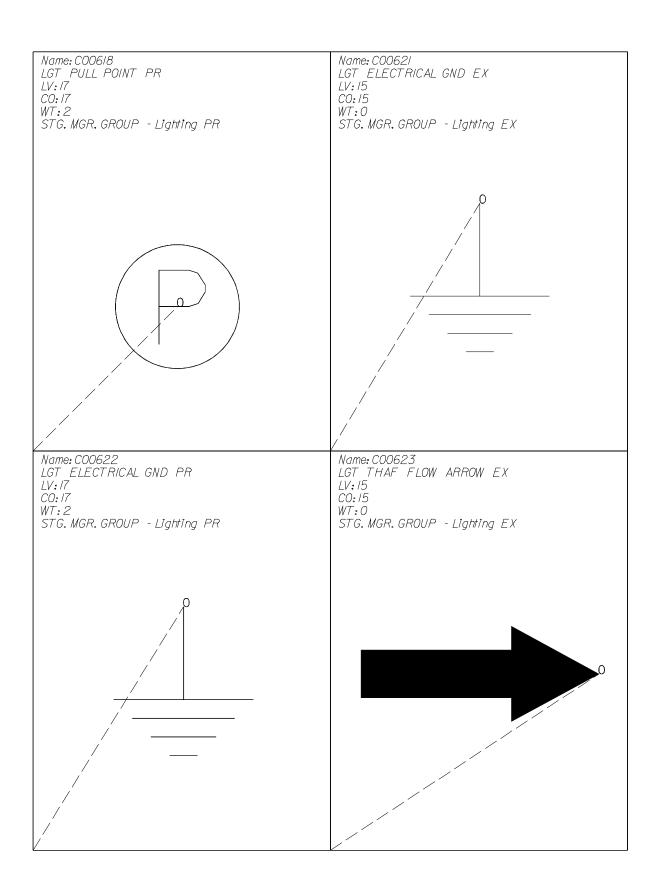


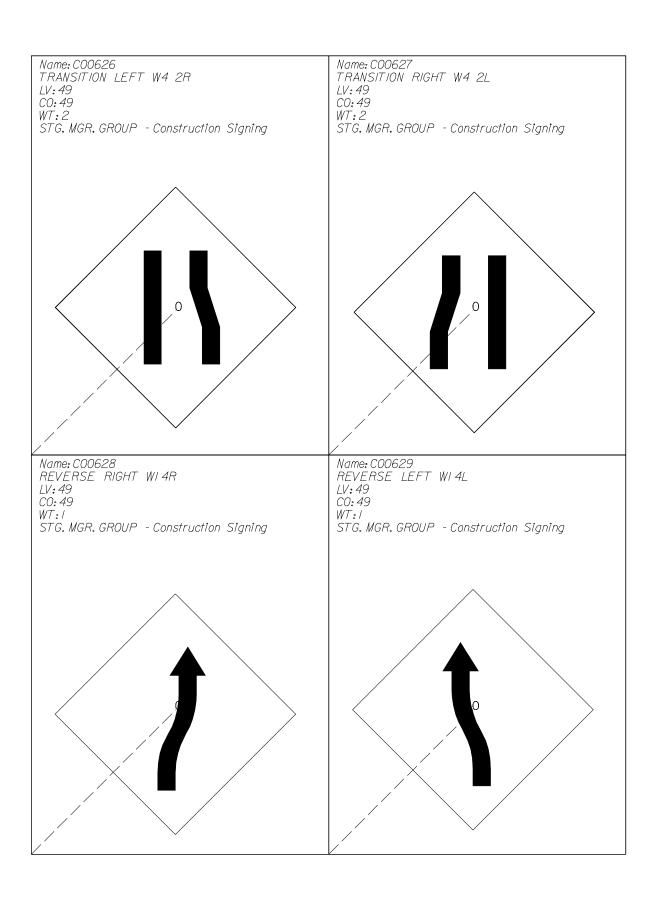


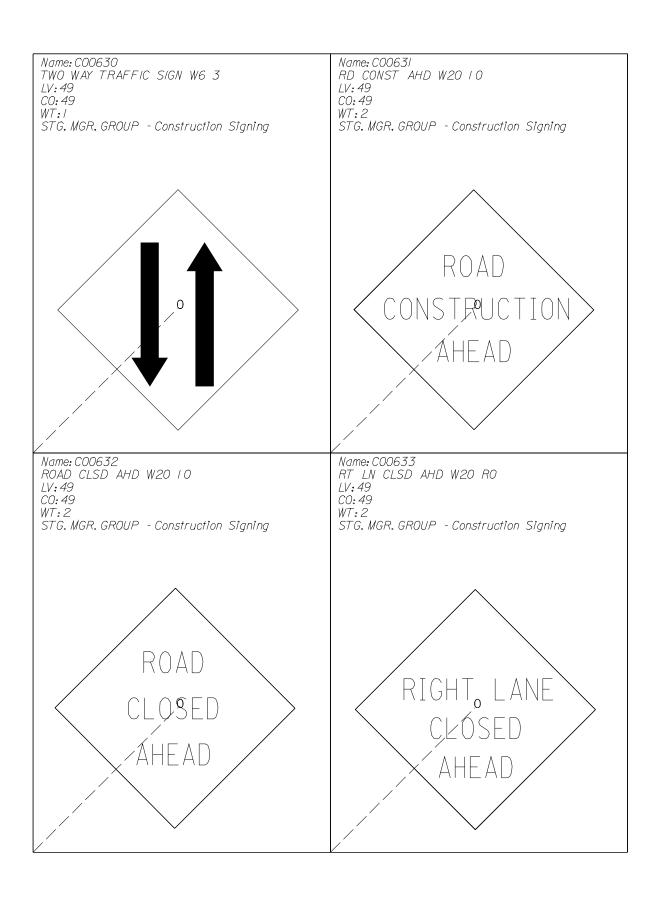


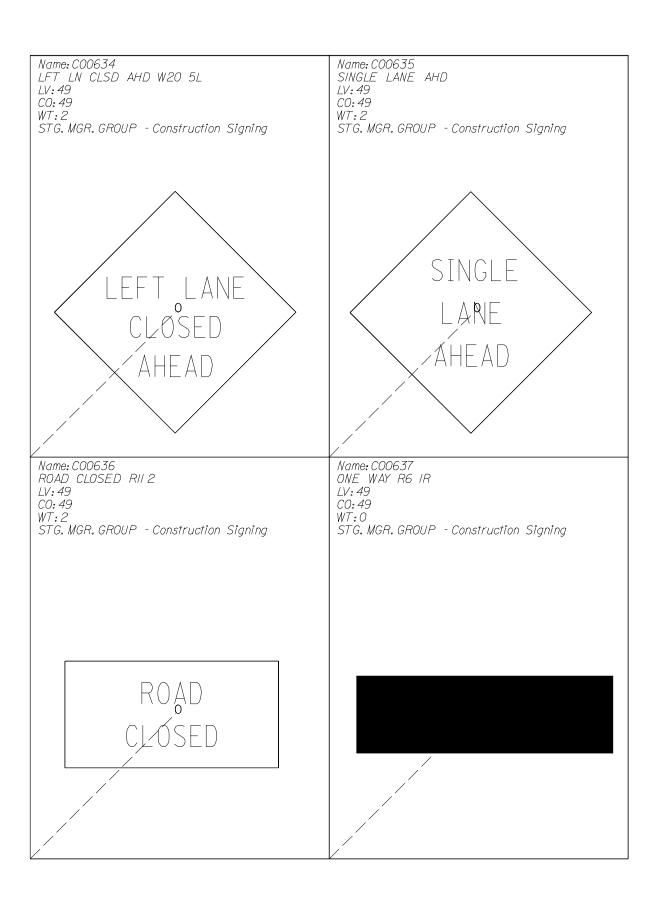


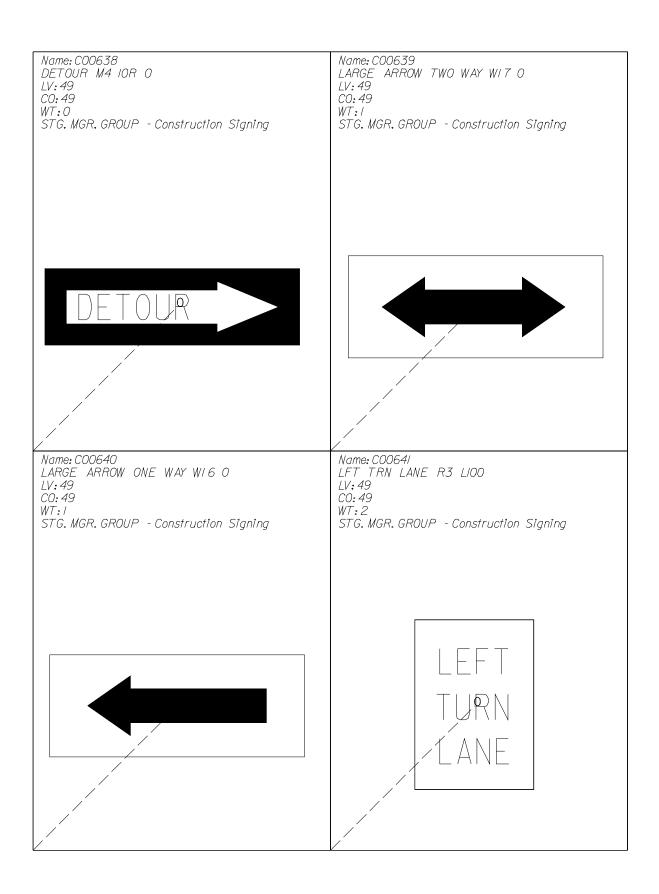


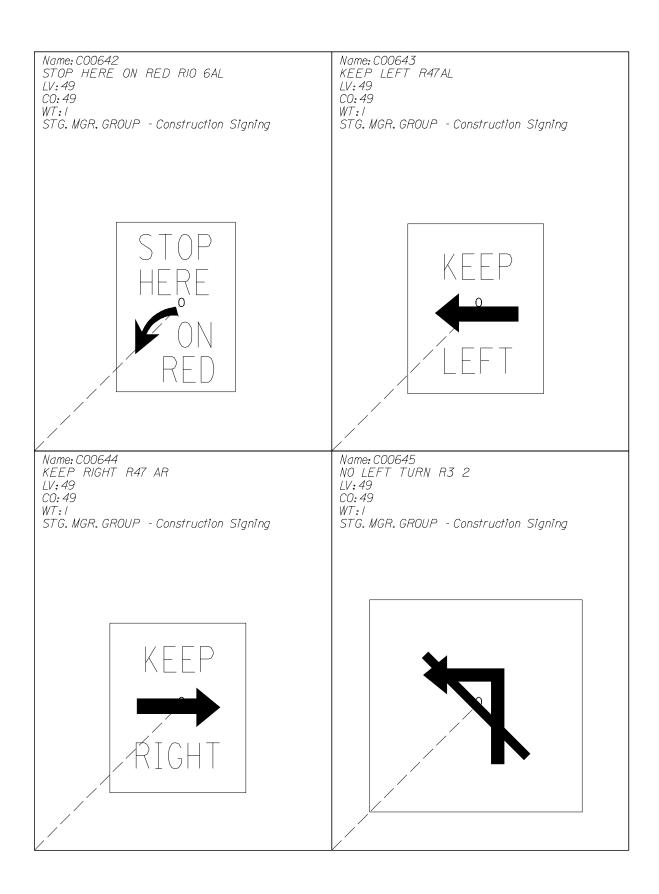


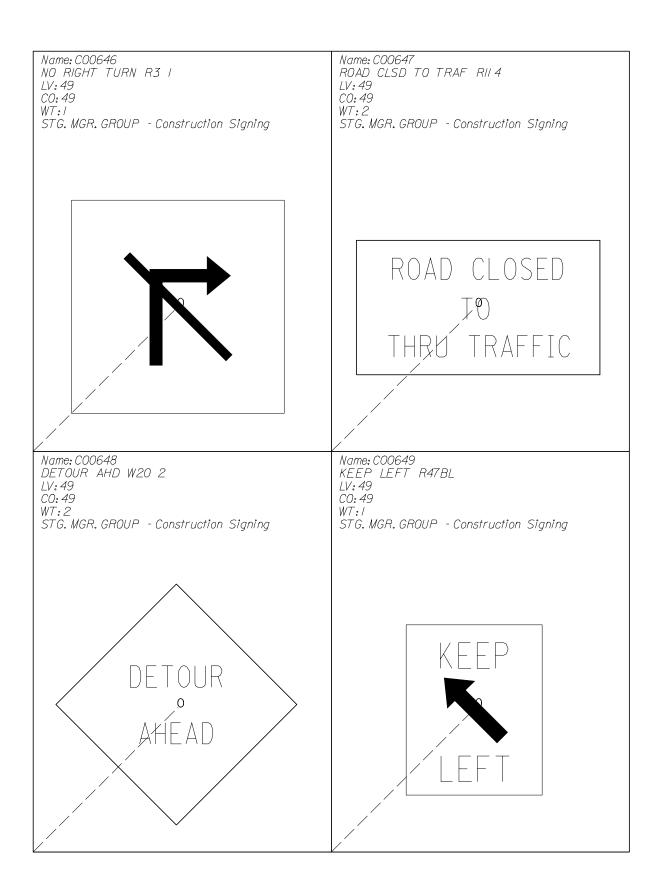


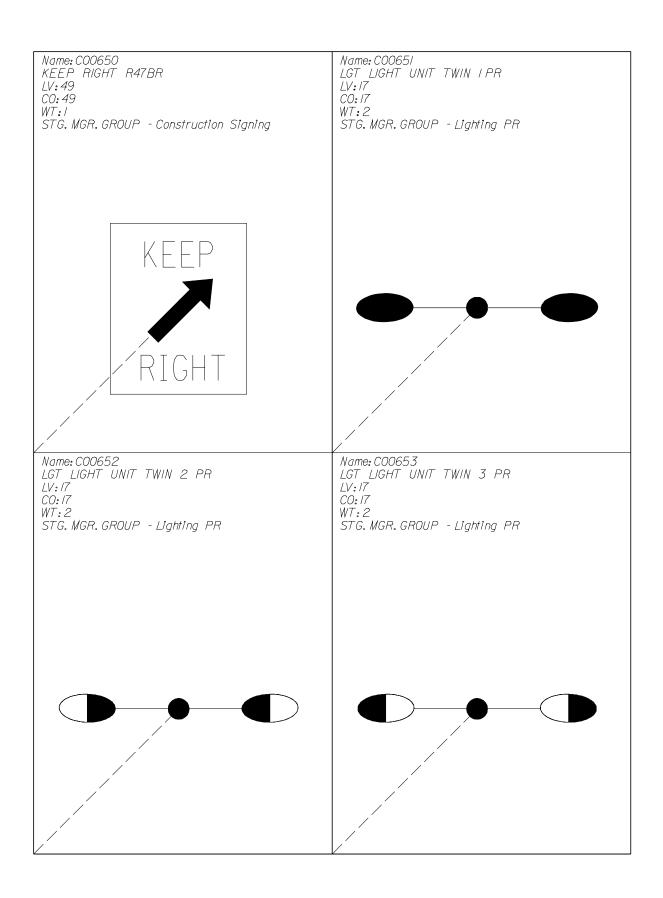


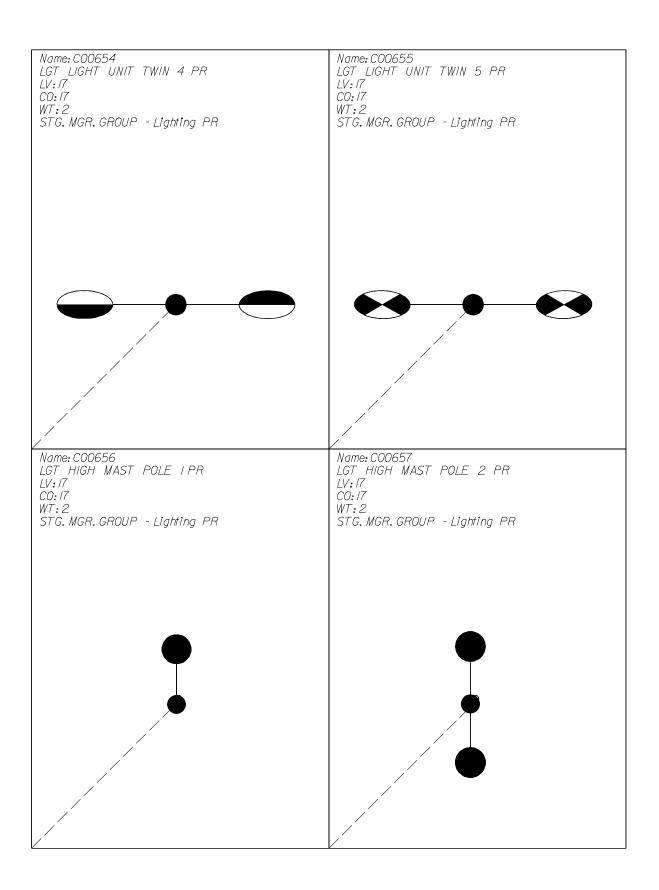


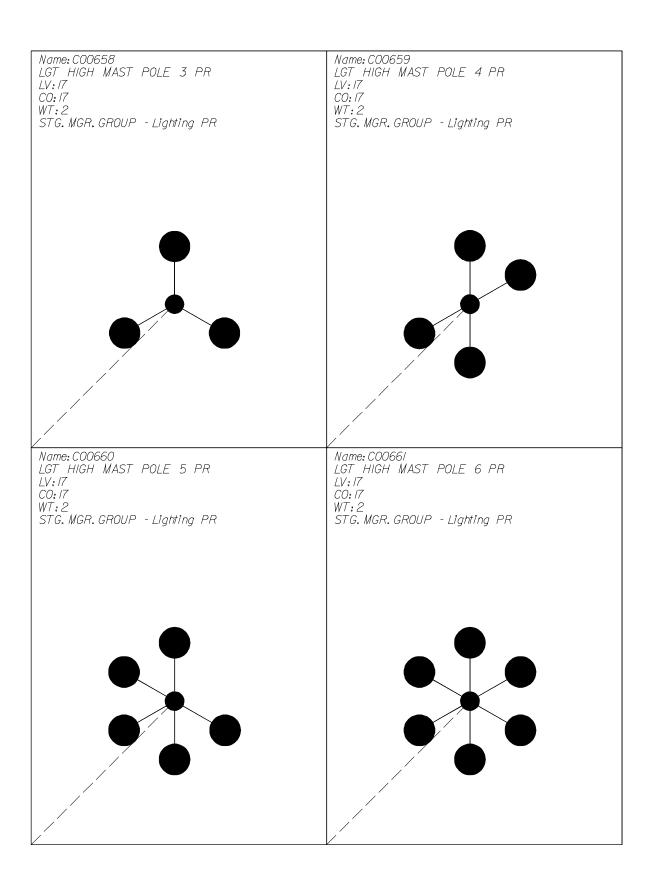


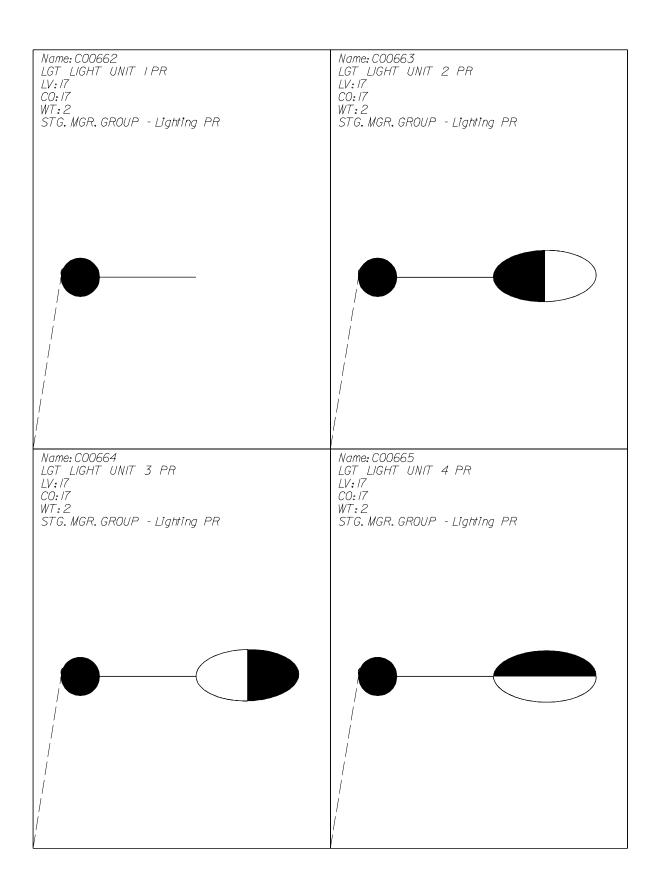


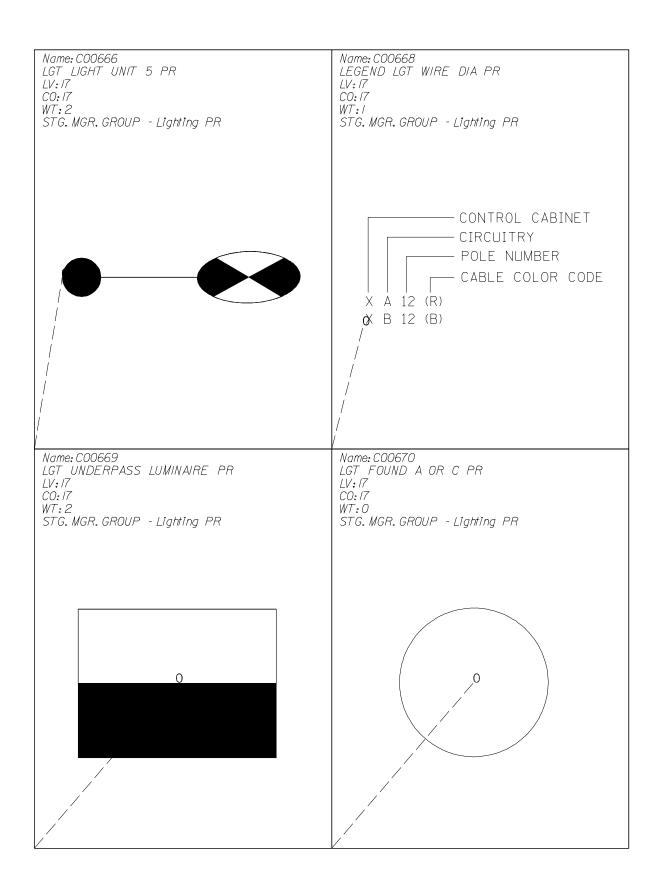


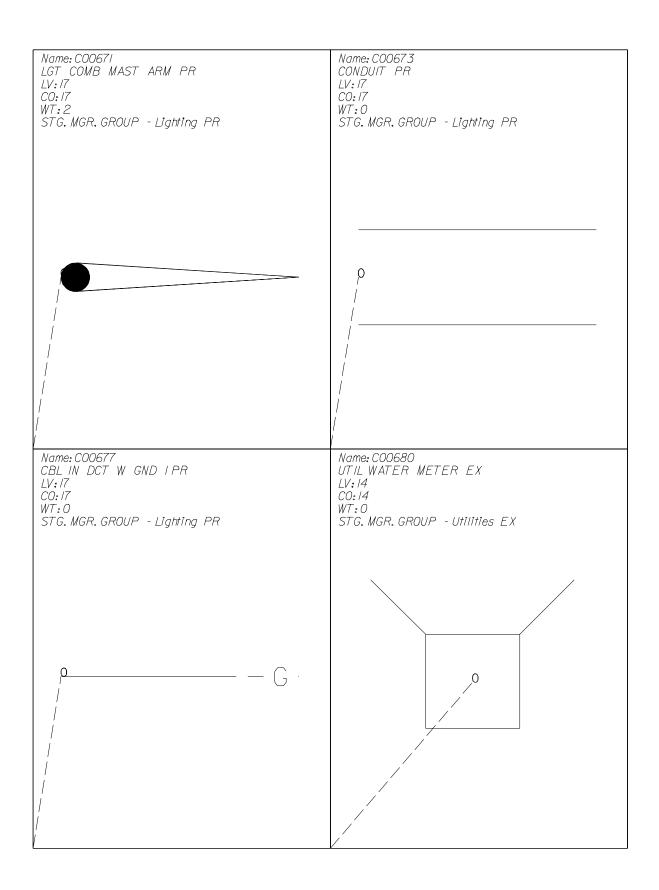


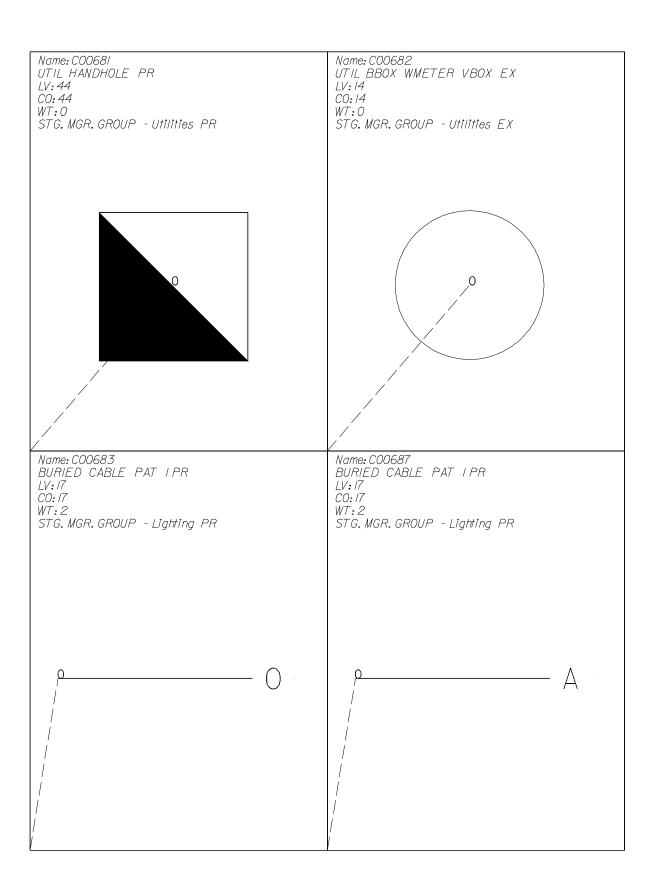


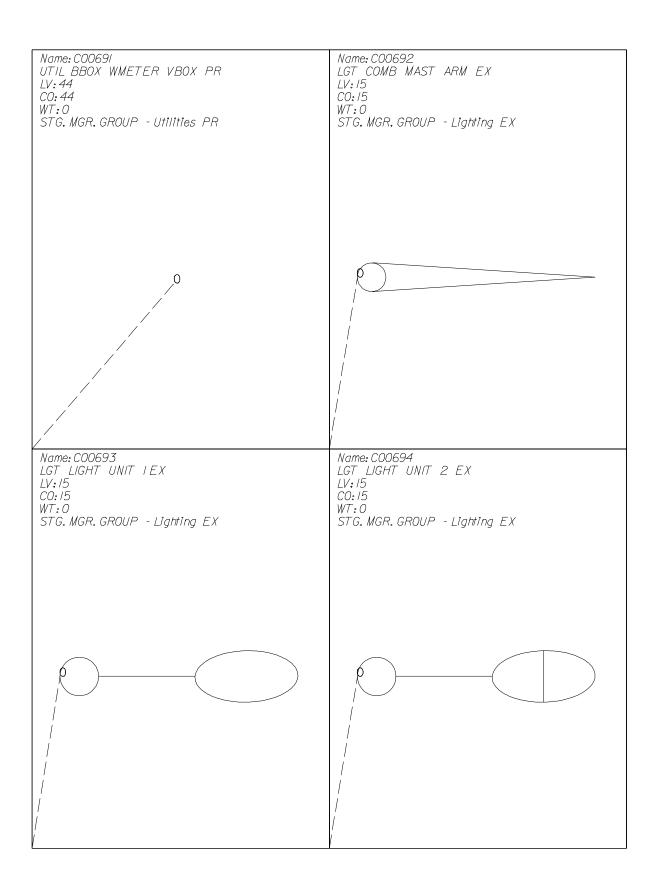


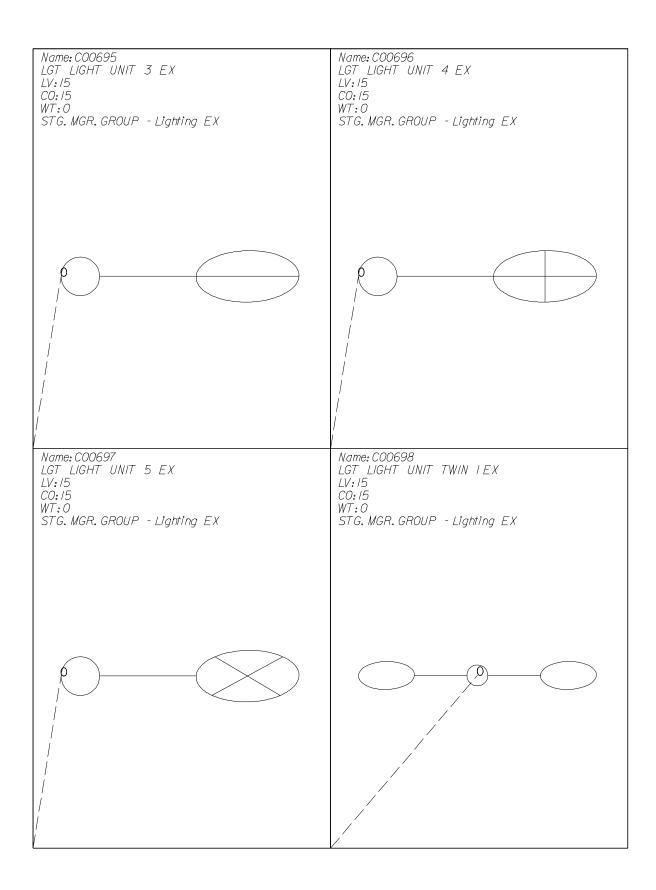


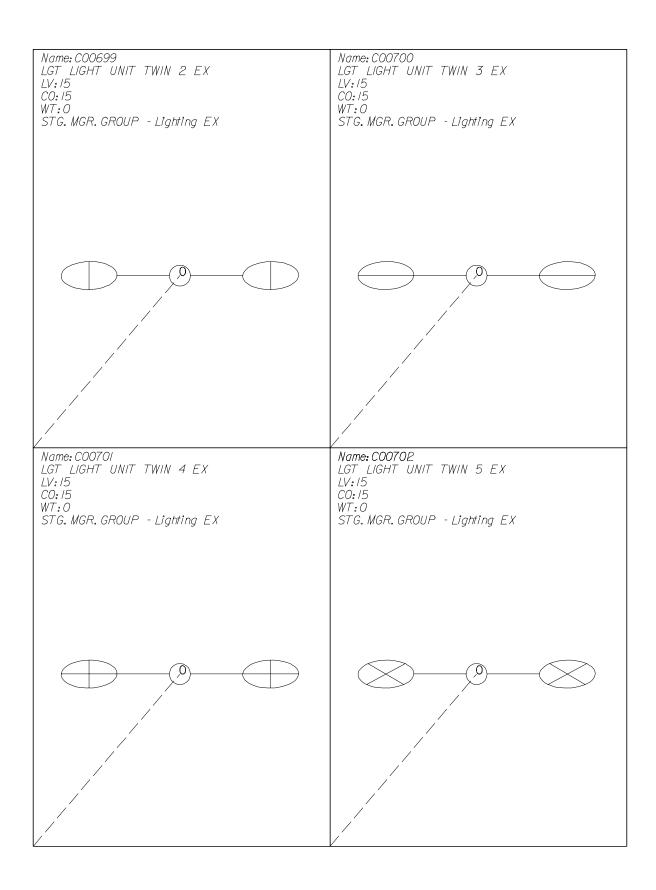


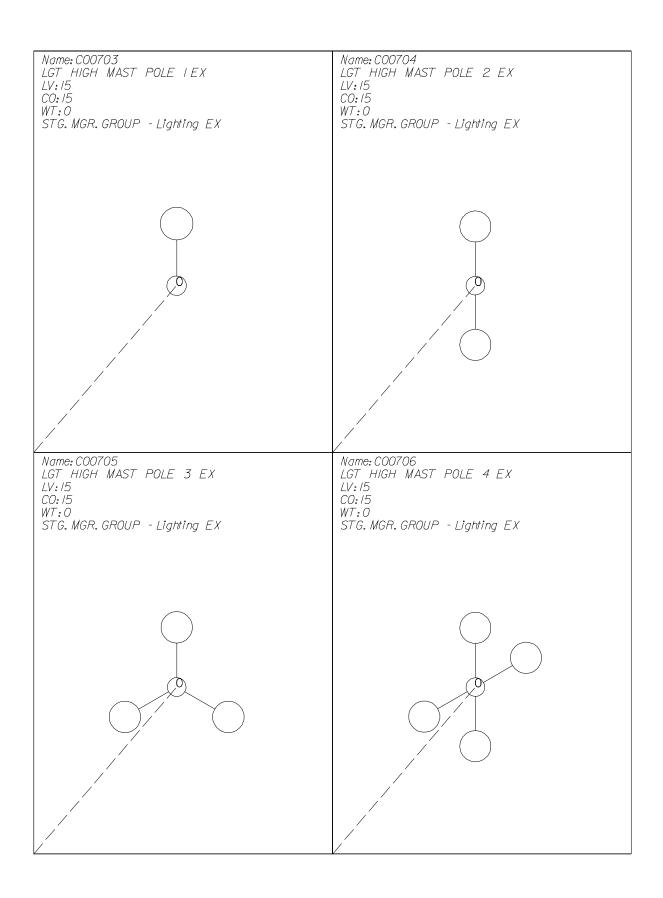


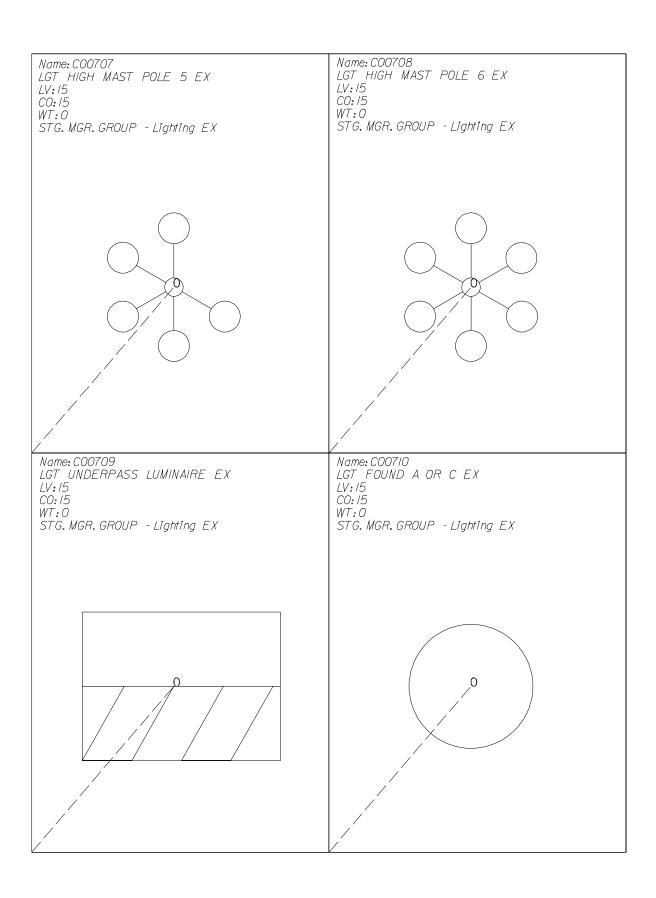




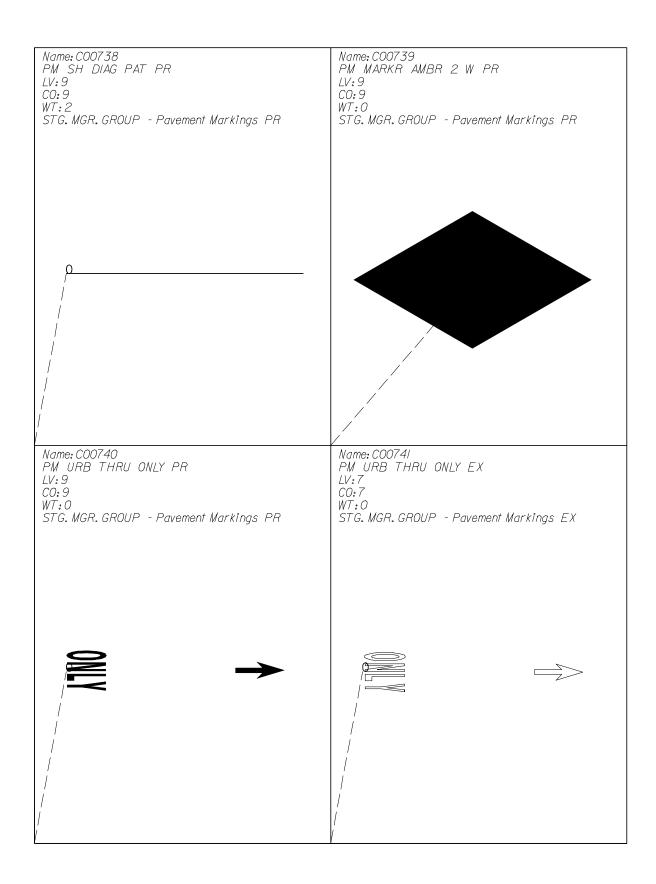




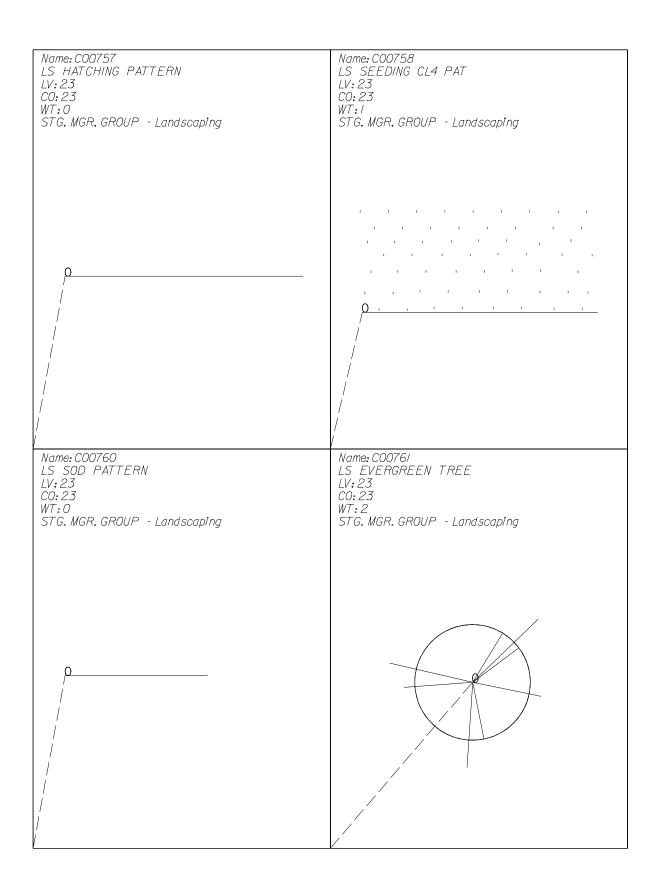


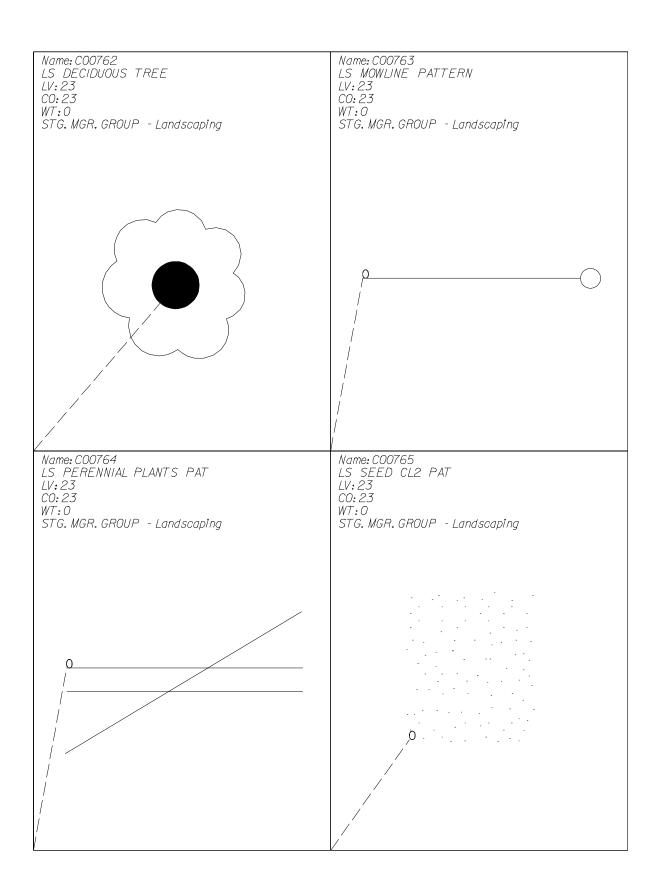


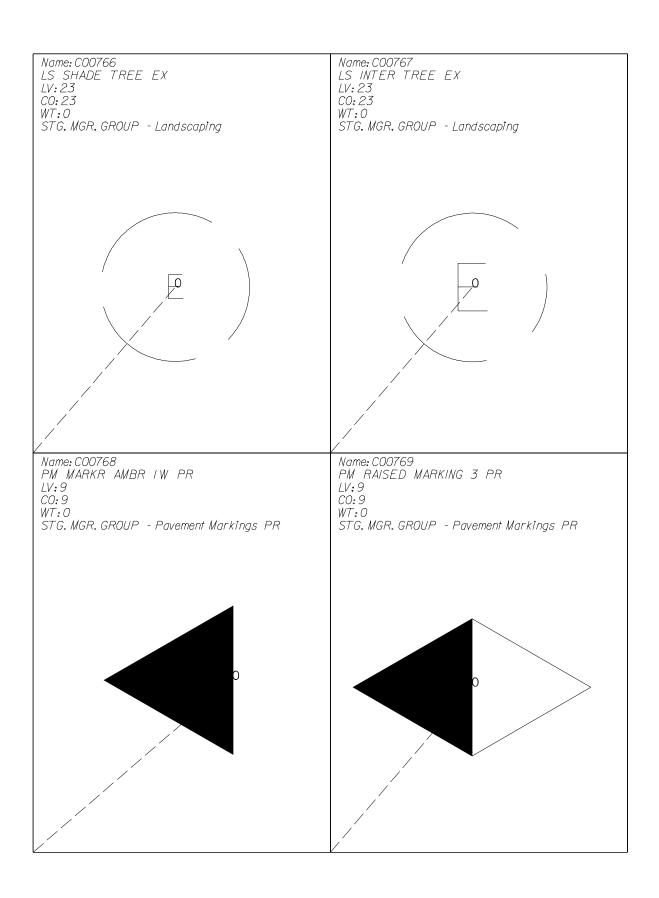
Name: C007/8 CBL IN DCT W GND EX LV: /5 C0: /5 WT: 0 STG. MGR. GROUP - Lighting EX	Name: C00722 CBL IN DCT W GND I EX LV: 15 CO: 15 WT: 0 STG. MGR. GROUP - Lighting EX
Name: C00726 CBL IN DCT W GND I EX LV: 15 CO: 15 WT: 0 STG. MGR. GROUP - Lighting EX	Name: C00730 CBL IN DCT WO GND I EX LV: 15 CO: 15 WT: 0 STG. MGR. GROUP - Lighting EX
	ρ

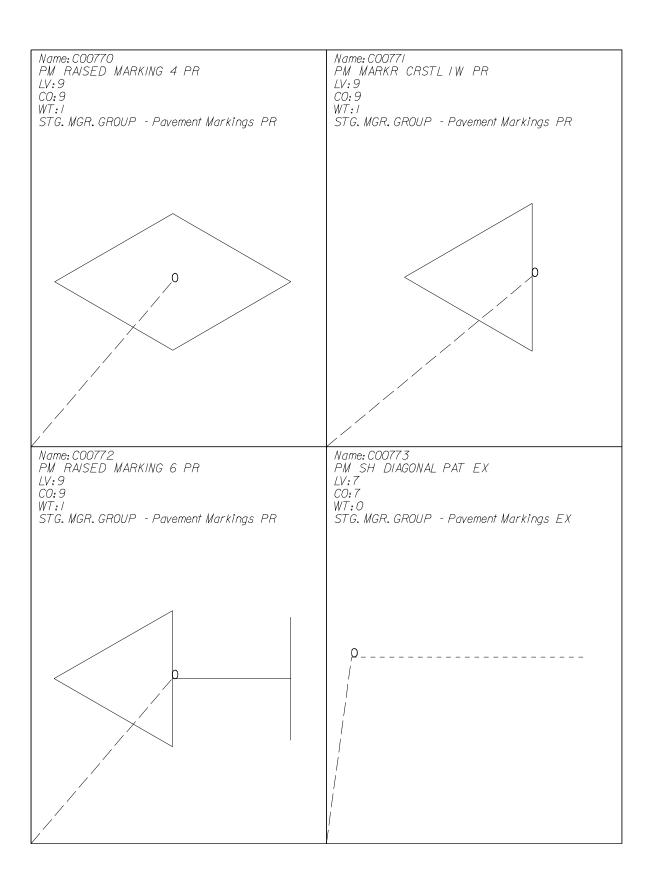


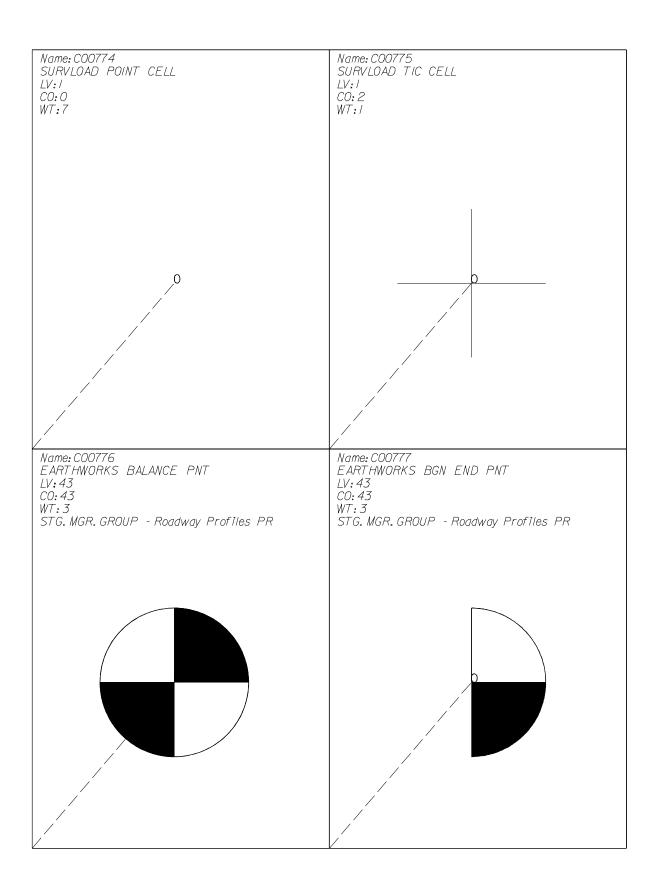
Name: C00742 TS RACEWAY PR	Name: C00751 CBL IN DCT WO GND I PR
LV:13	LV:17
CO:13	CO: 17
WT: STG.MGR.GROUP -Traf.Signal Plan PR	WT:2 STG. MGR. GROUP - Lighting PR
310. MON. ONOOT TTAI. SIGNATTIAN TT	STO. MOR. OROOT LIGHTING TR
0	ρ
1	
1 Mana COOZEE	Name COOZEC
Name: COO755 LS SEEDLING TYPE I PAT	Name: C00756 LS HATCHING PATTERN
LS SEEDLING TYPE I PAT	LS HATCHING PATTERN LV: 23
LS SEEDLING TYPE I PAT LV: 23 CO: 23	LS HATCHING PATTERN LV: 23 CO: 23
LS SEEDLING TYPE I PAT	LS HATCHING PATTERN LV: 23
LS SEEDLING TYPE I PAT LV: 23 CO: 23 WT: 0	LS HATCHING PATTERN LV: 23 CO: 23 WT: 0
LS SEEDLING TYPE I PAT LV: 23 CO: 23 WT: 0	LS HATCHING PATTERN LV: 23 CO: 23 WT: 0
LS SEEDLING TYPE I PAT LV: 23 CO: 23 WT: 0	LS HATCHING PATTERN LV: 23 CO: 23 WT: 0
LS SEEDLING TYPE / PAT LV:23 CO:23 WT:0	LS HATCHING PATTERN LV: 23 CO: 23 WT: 0
LS SEEDLING TYPE I PAT LV: 23 CO: 23 WT: 0	LS HATCHING PATTERN LV: 23 CO: 23 WT: 0
LS SEEDLING TYPE / PAT LV:23 CO:23 WT:0	LS HATCHING PATTERN LV: 23 CO: 23 WT: 0
LS SEEDLING TYPE / PAT LV:23 CO:23 WT:0	LS HATCHING PATTERN LV: 23 CO: 23 WT: 0
LS SEEDLING TYPE / PAT LV:23 CO:23 WT:0	LS HATCHING PATTERN LV: 23 CO: 23 WT: 0
LS SEEDLING TYPE / PAT LV:23 CO:23 WT:0	LS HATCHING PATTERN LV: 23 CO: 23 WT: 0
LS SEEDLING TYPE / PAT LV:23 CO:23 WT:0	LS HATCHING PATTERN LV: 23 CO: 23 WT: 0
LS SEEDLING TYPE / PAT LV:23 CO:23 WT:0	LS HATCHING PATTERN LV: 23 CO: 23 WT: 0
LS SEEDLING TYPE / PAT LV:23 CO:23 WT:0	LS HATCHING PATTERN LV: 23 CO: 23 WT: 0
LS SEEDLING TYPE / PAT LV:23 CO:23 WT:0	LS HATCHING PATTERN LV: 23 CO: 23 WT: 0
LS SEEDLING TYPE / PAT LV:23 CO:23 WT:0	LS HATCHING PATTERN LV: 23 CO: 23 WT: 0
LS SEEDLING TYPE / PAT LV:23 CO:23 WT:0	LS HATCHING PATTERN LV: 23 CO: 23 WT: 0
LS SEEDLING TYPE I PAT LV: 23 CO: 23 WT: 0	LS HATCHING PATTERN LV: 23 CO: 23 WT: 0
LS SEEDLING TYPE / PAT LV:23 CO:23 WT:0	LS HATCHING PATTERN LV: 23 CO: 23 WT: 0
LS SEEDLING TYPE / PAT LV:23 CO:23 WT:0	LS HATCHING PATTERN LV: 23 CO: 23 WT: 0

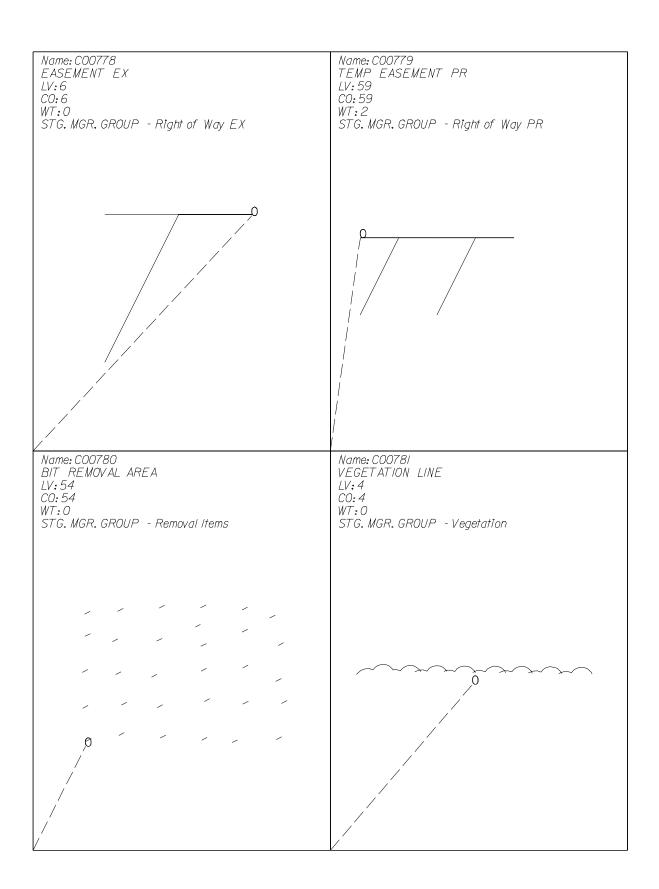


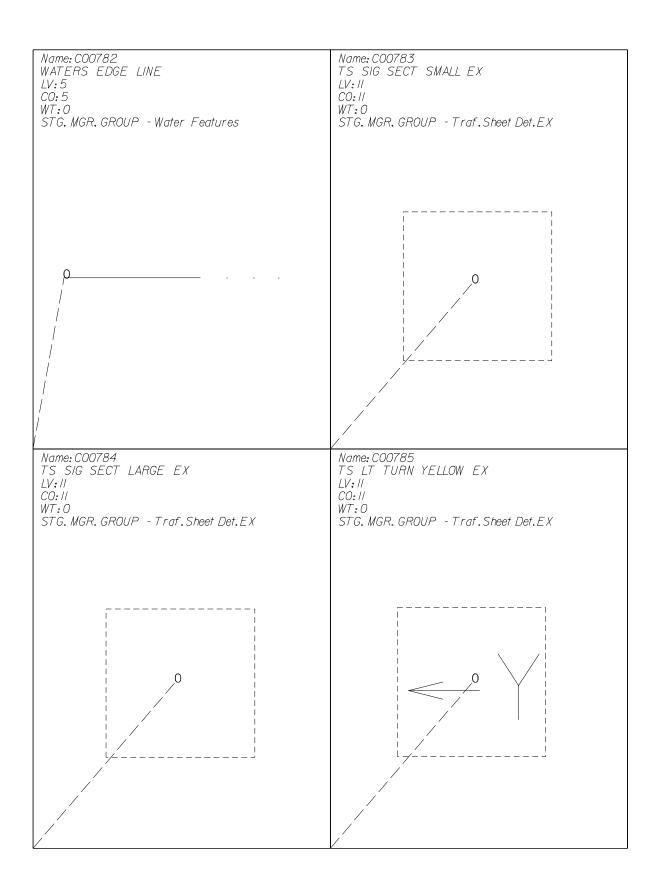


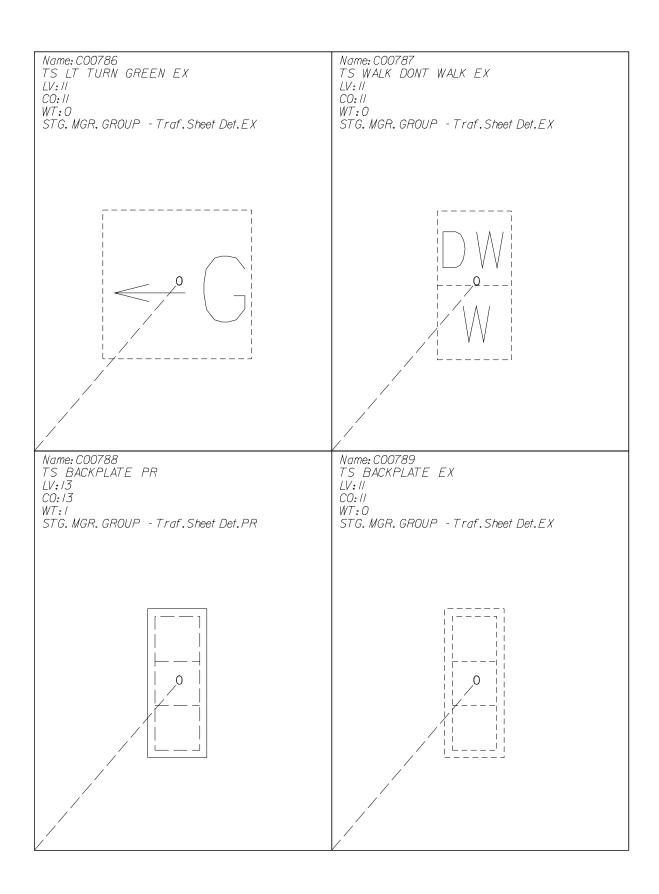


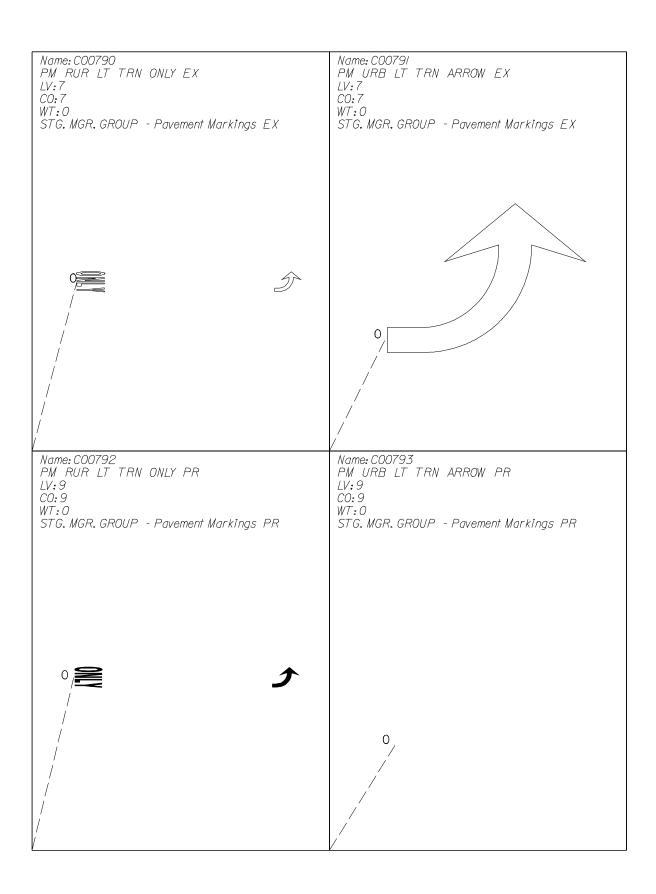


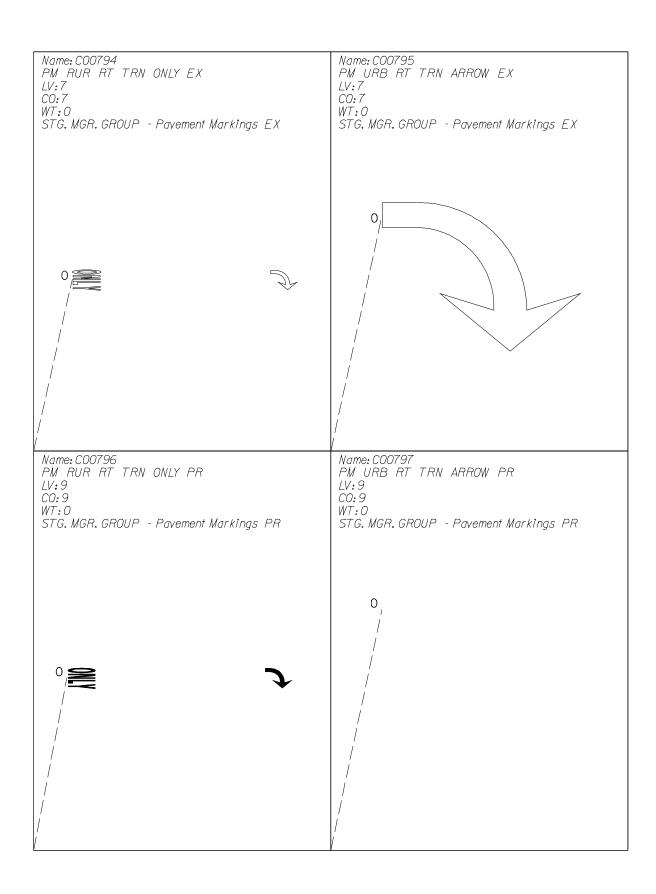


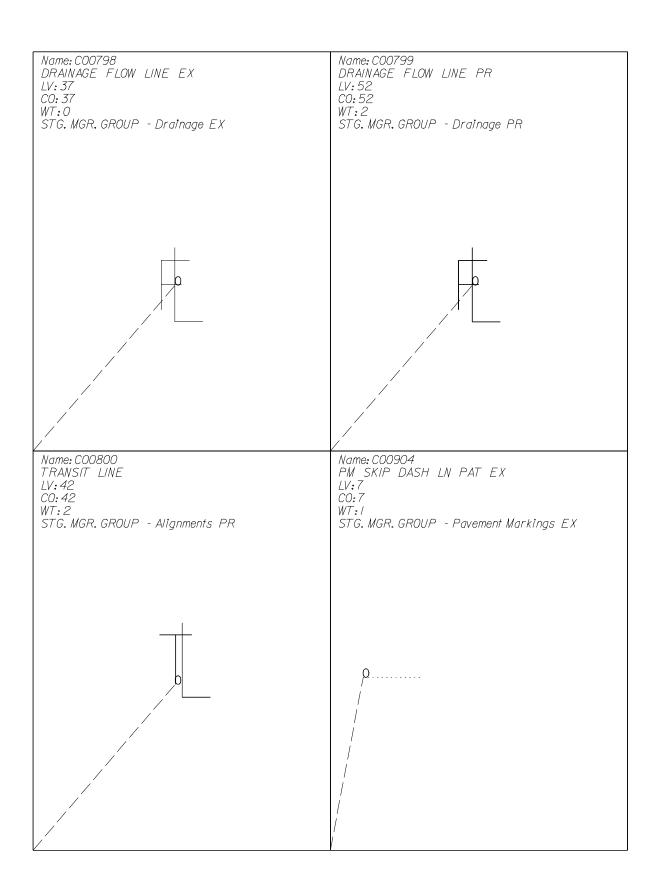










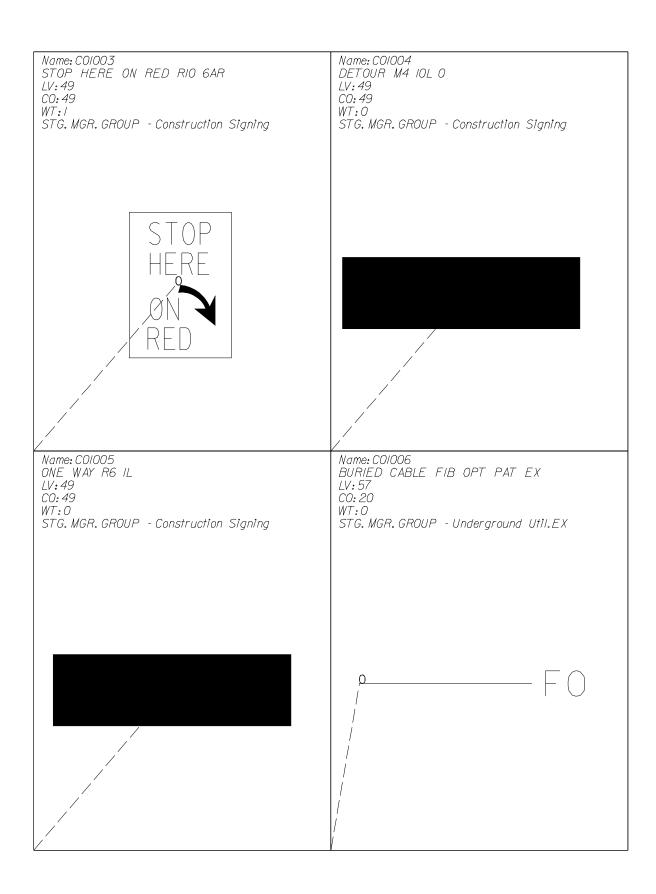


Name: C00905	Name: C00906
PM SKIP DASH LN PAT PR	PM DOTTED LINES PAT EX
LV: 9 CO: 9	LV:7 CO:7
WT: /	WT:/
STG. MGR. GROUP - Pavement Markings PR	STG. MGR. GROUP - Pavement Markings EX
	·
0	ρ
	j'
Name: C00907	Name: C00908
PM DOTTED LINES PAT PR	PM SKIP DASH WHITE PR
LV:9	LV:9
CO: 9	CO: 0
WT: STG. MGR. GROUP - Pavement Markings PR	WT:/ STG. MGR. GROUP - Pavement Markings PR
37 0. Work on our Tayonon Warkingo Tri	37 8. mort. Ortoor Tavamari markinga 1 11
0	ρ
1 '	
j	

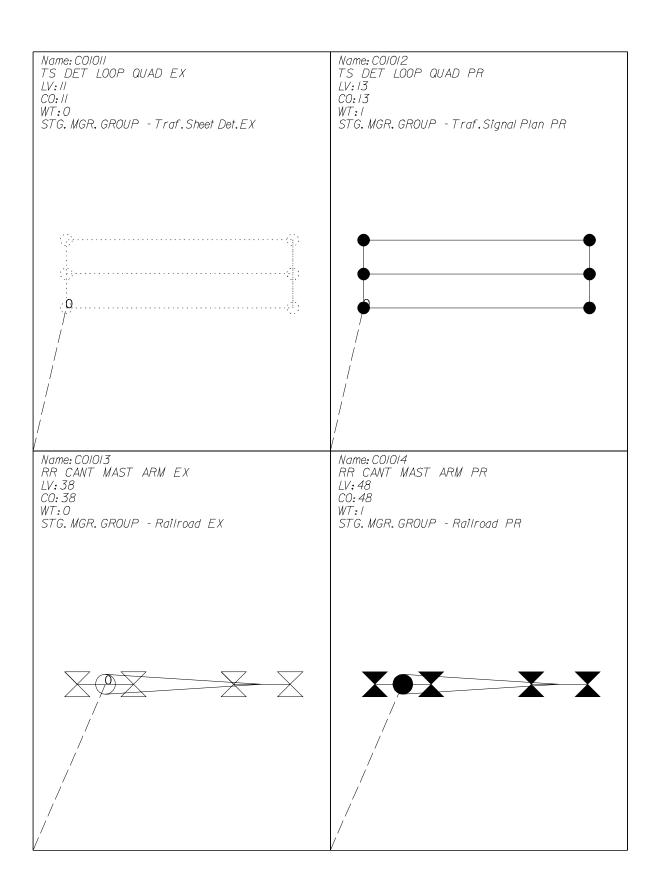
Name: C00909 PM SKIP DASH YELLOW PR LV: 9 C0: 3 WT: 0	Name: C00910 PM DBL CENTERLINE PAT EX LV: 7 C0: 7 WT: 1
STG. MGR. GROUP - Pavement Markings PR	STG. MGR. GROUP - Pavement Markings EX
	,O ,/ ,/ ,/
Name: CO09 PM DBL CENTERLINE PAT PR LV:9 CO:9 WT: STG. MGR. GROUP - Pavement Markings PR	Name: C009/2 PM STOP LINE PAT EX LV:7 C0:7 WT:/ STG. MGR. GROUP - Pavement Markings EX
0	0

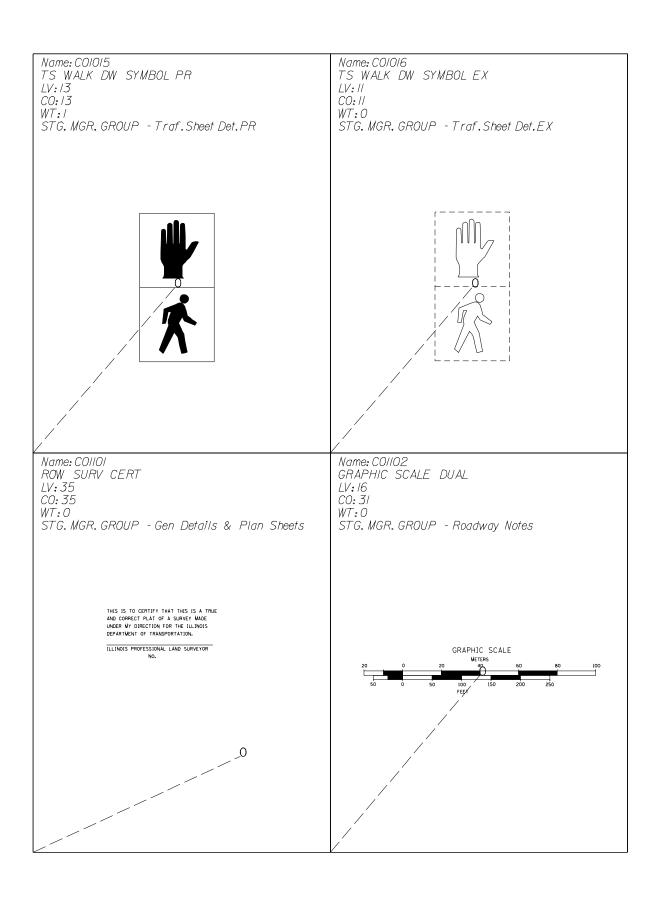
Name: C00913 PM STOP LINE PAT PR LV: 9 C0: 9 WT: 2 STG. MGR. GROUP - Pavement Markings PR	Name: C00932 SANITARY SEWER PR LV: 57 C0: 58 WT: 2 STG. MGR. GROUP - Underground Util.EX
Name: C00933 STORM SEWER PAT PR LV: 58 C0: 58 WT: 2 STG. MGR. GROUP - Underground Util.PR	Name: C00934 CONDUIT EX LV: 15 CO: 15 WT: 0 STG. MGR. GROUP - Lighting EX
STO. WON. ONGOT ONGOT GLOBAL GITT.	Tree. Work. Orlows Lighting Ex

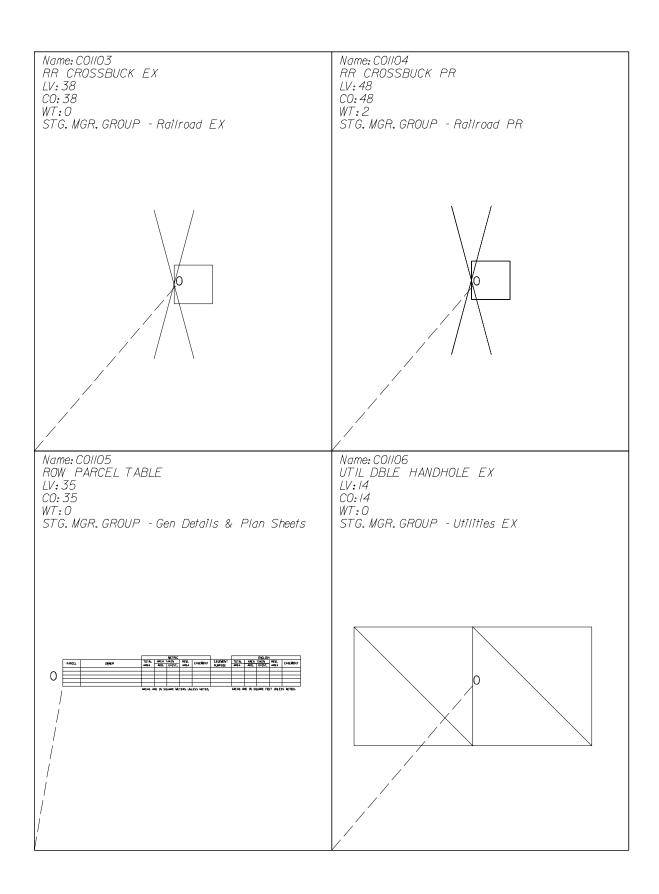
Name: C00935	Name: C00936
SECT GRANT LN PAT	TS UNDGND CABLE EX
LV: 10	LV: //
CO: 12	CO: //
WT:0	WT:O
STG. MGR. GROUP - Boundaries	STG. MGR. GROUP - Traf. Sheet Det.EX
0	
ν – – –	ν
	!
Name: COIOOI	Name: CO1002
PM URB COMB RT TRN ONLY PR	PM URB COMB RT ONLY EX
LV:9	LV:7
CO: 9	CO: 7
WT: 0	WT:0
STG. MGR. GROUP - Pavement Markings PR	STG. MGR. GROUP - Pavement Markings EX
—	

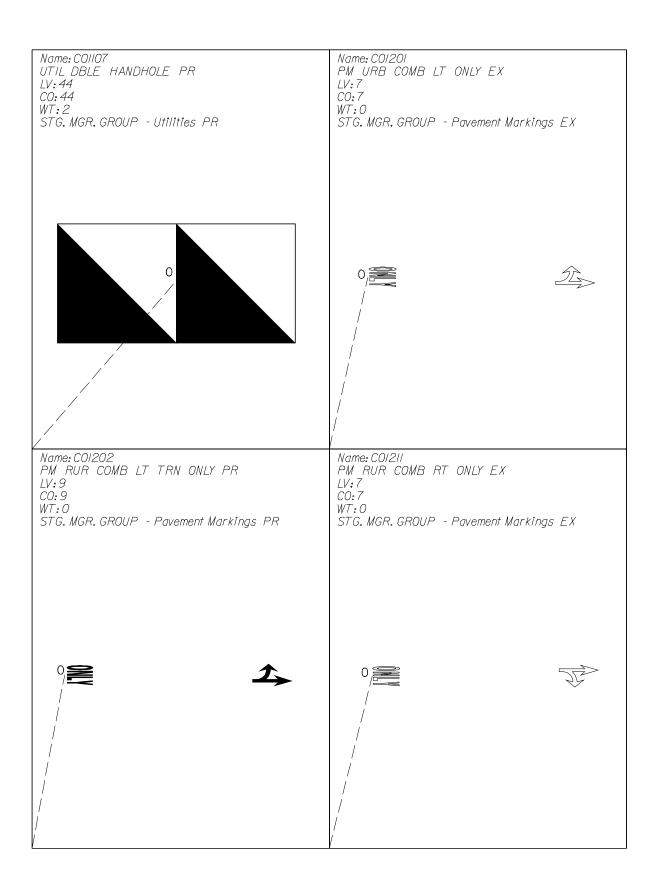


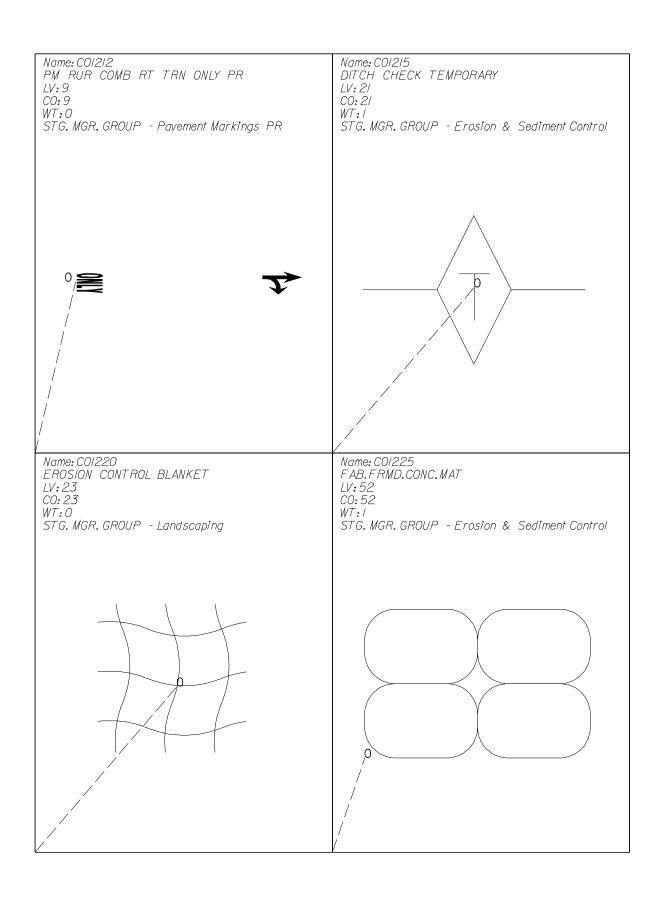
Name: COIOO7 BURIED CABLE FIB OPT PAT PR LV: 58 CO: 20 WT: 2 STG. MGR. GROUP - Underground Util.PR	Name: COIOO8 BURIED CABLE TV PAT EX LV: 57 CO: 20 WT: 0 STG. MGR. GROUP - Underground Util.EX
<u>o</u> F ()	<u></u>
	Name: COIOIO STORM SEWER PAT EX LV:57 CO:57 WT:0
STG, MGR. GROUP - Underground Util.PR	STG. MGR. GROUP - Underground Util. EX

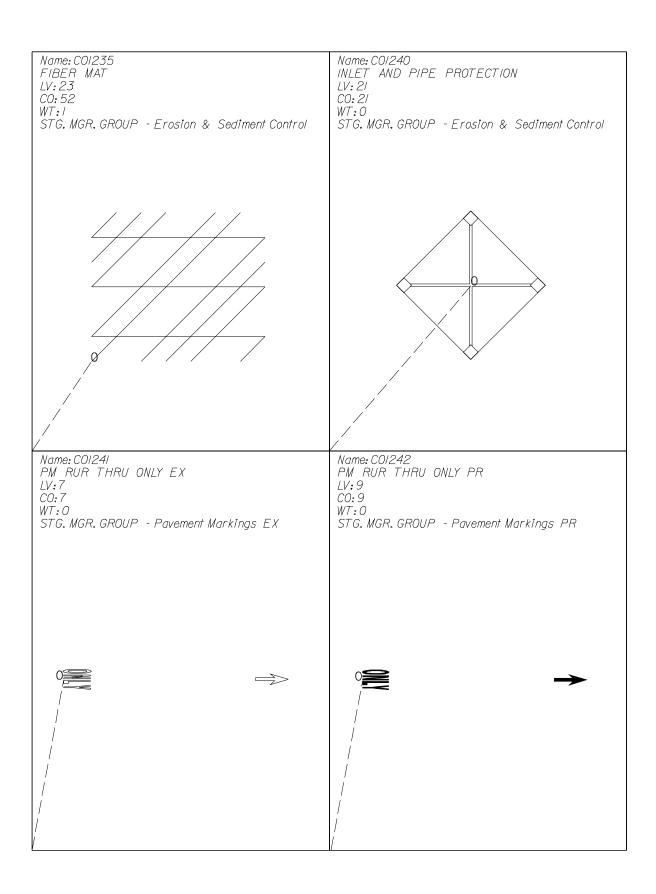


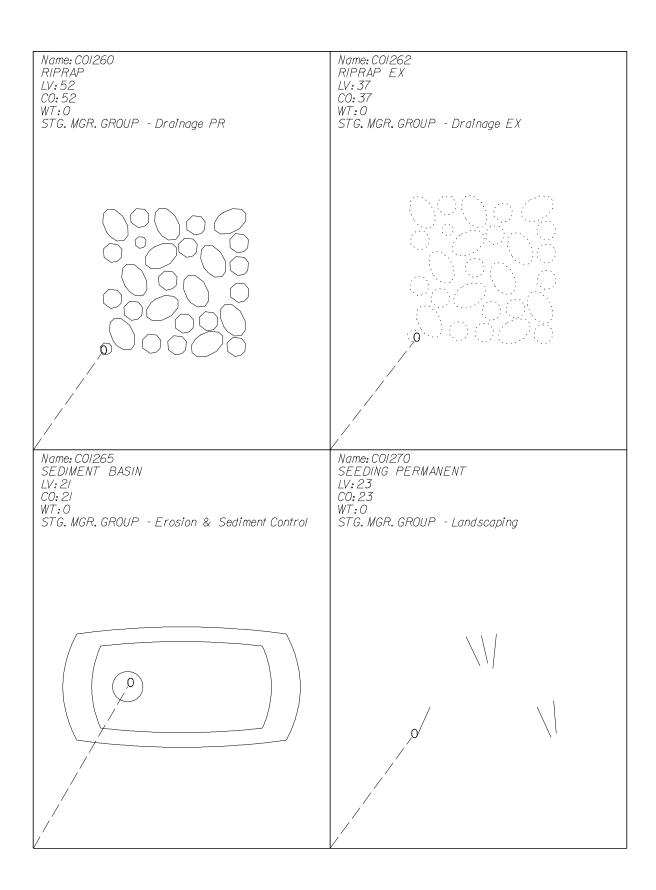


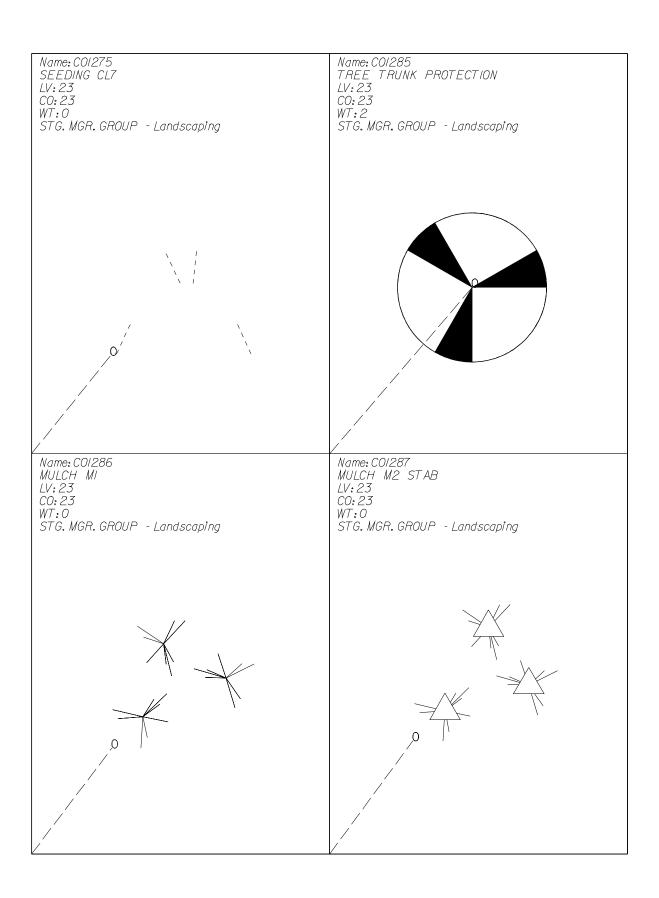


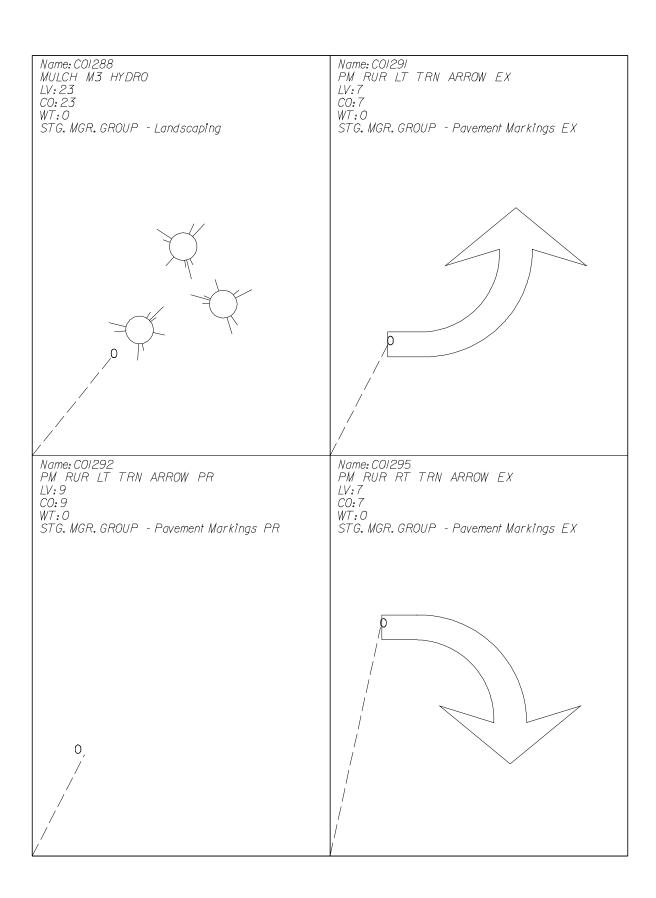


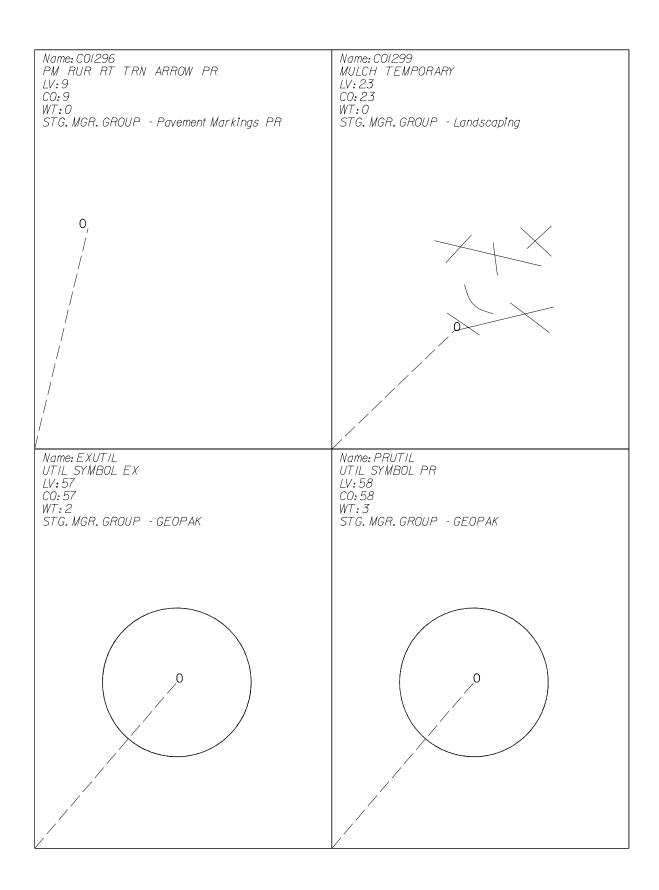


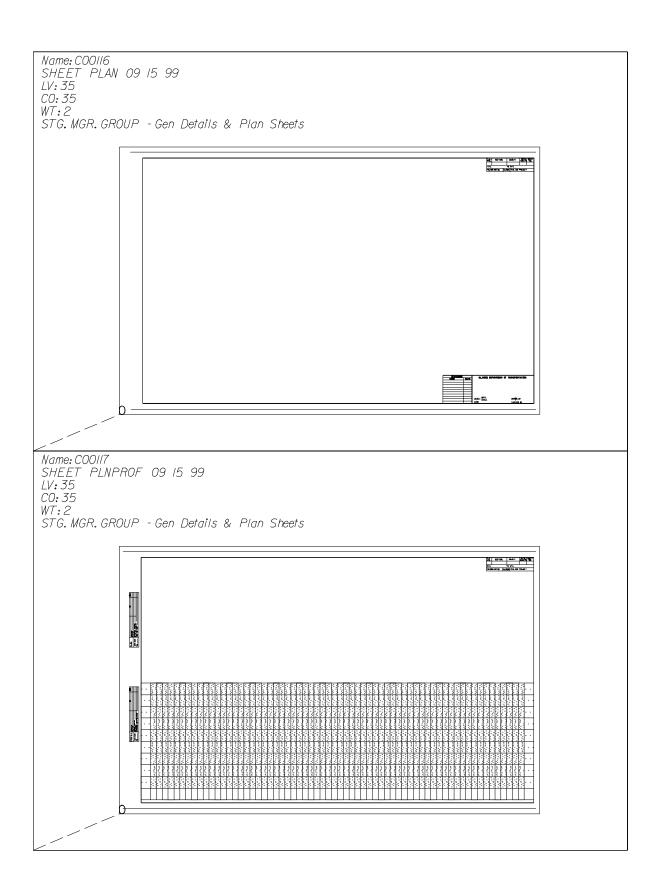


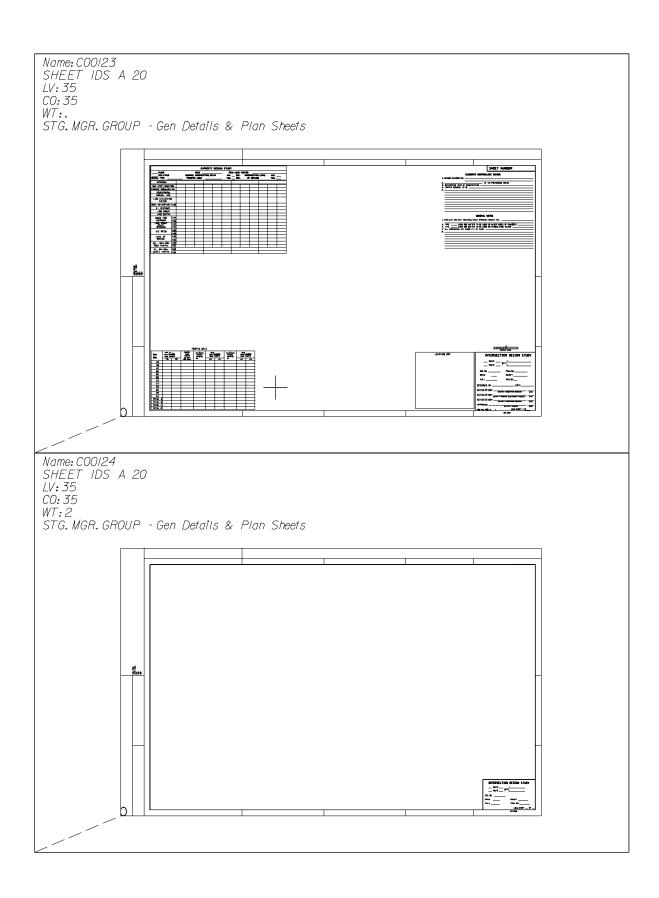


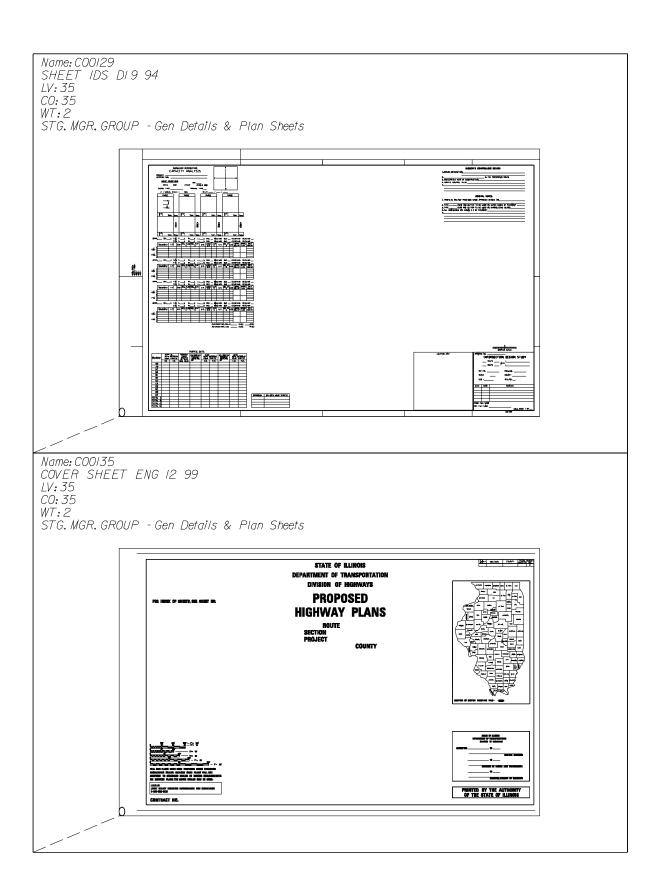


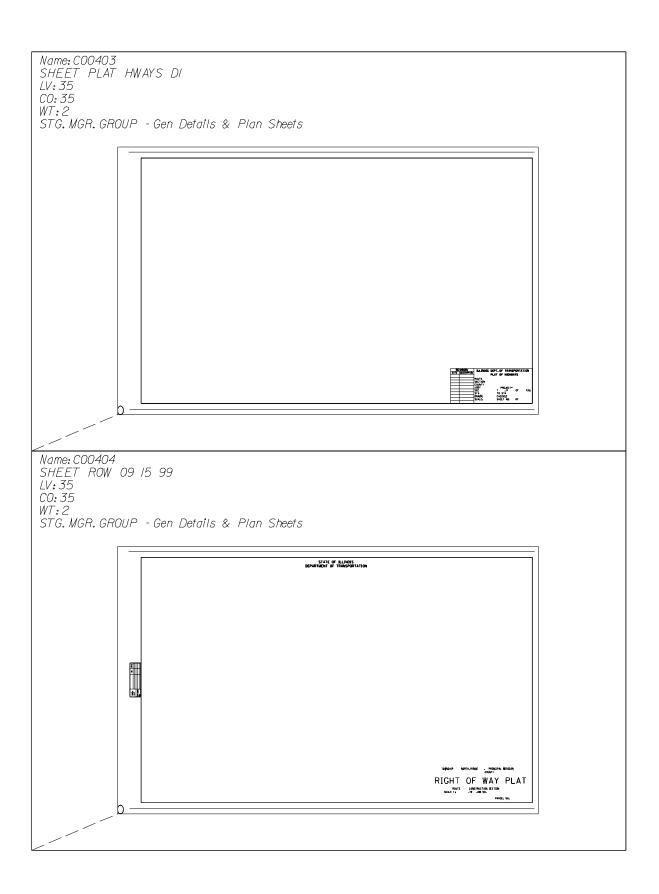


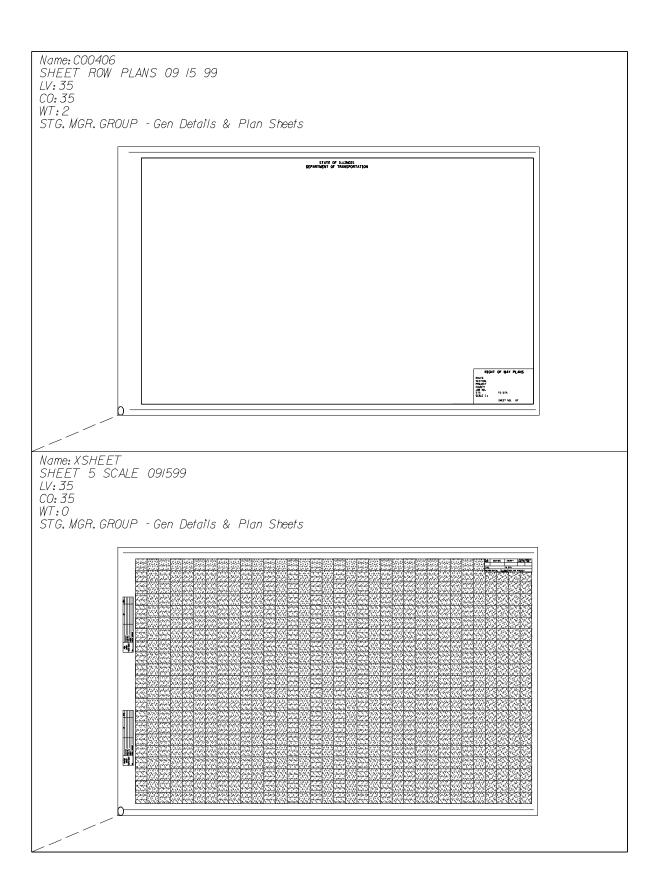


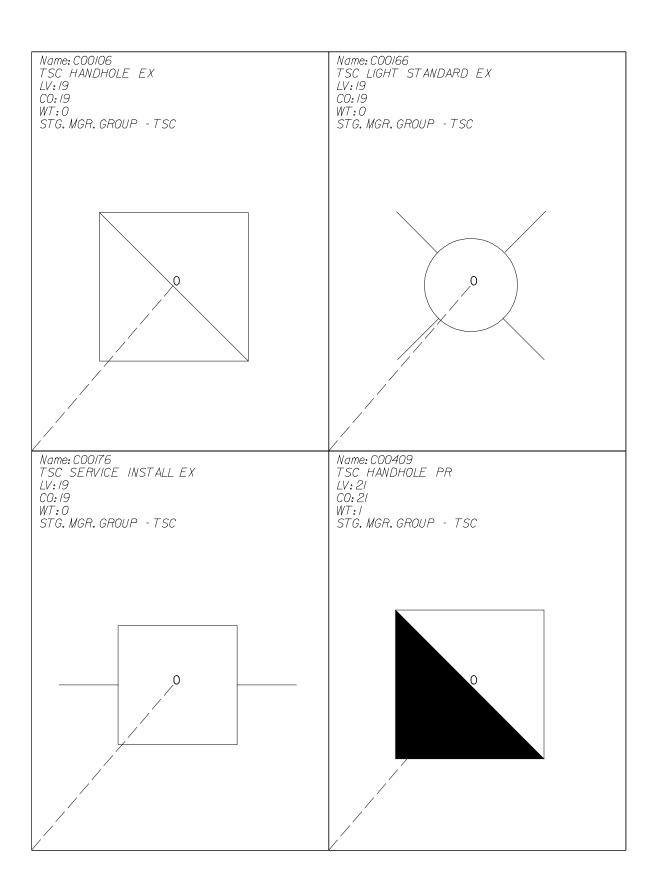


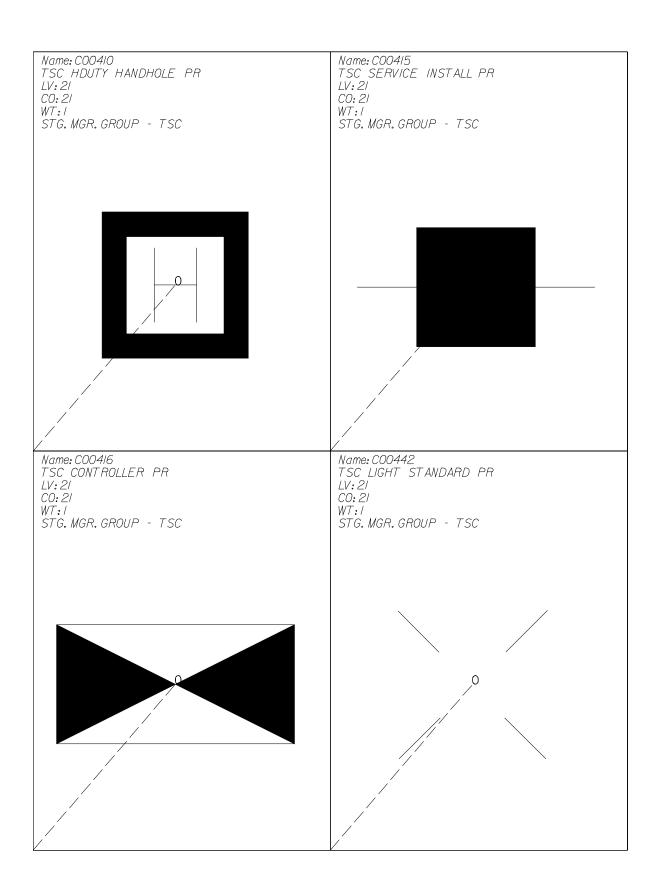


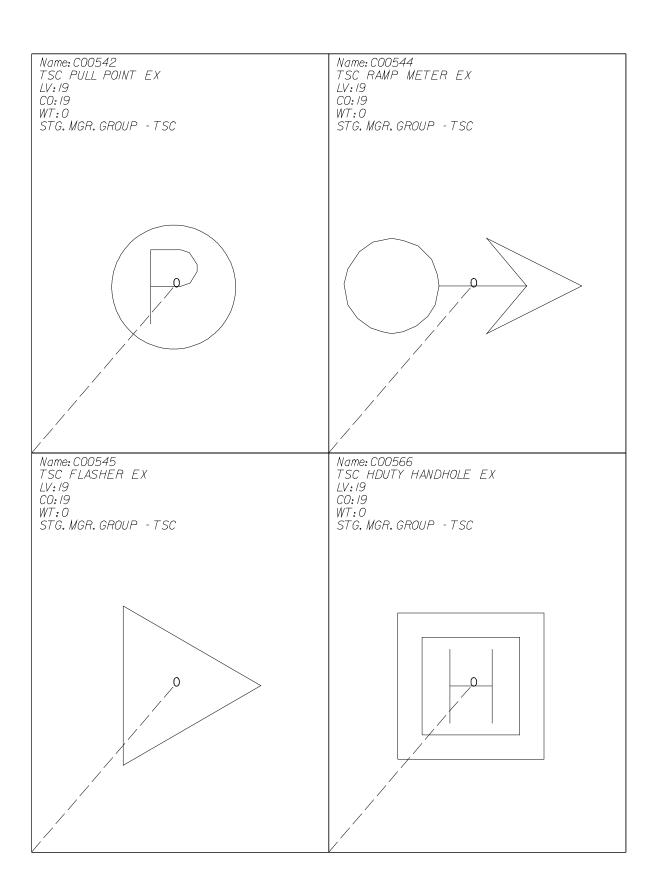


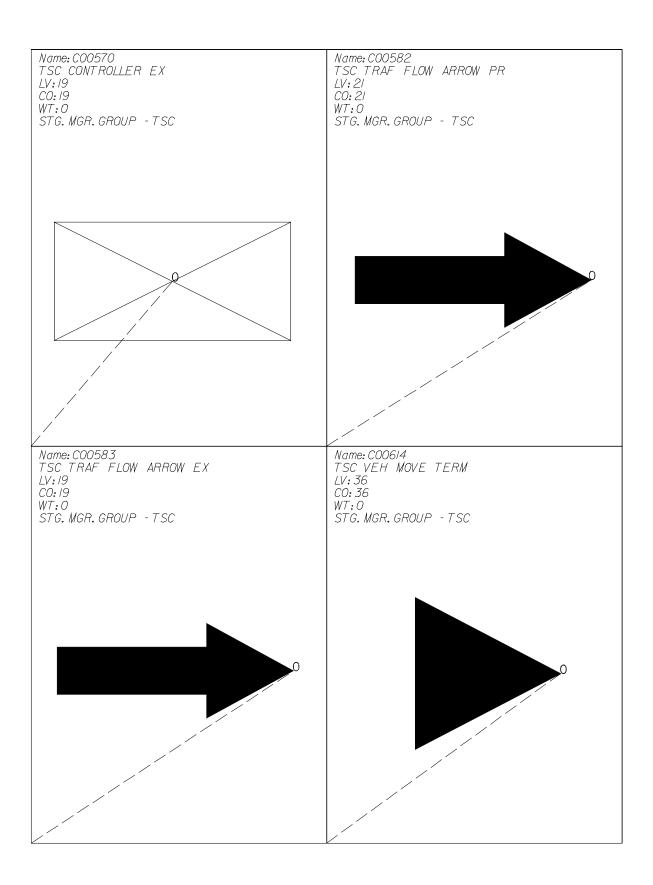


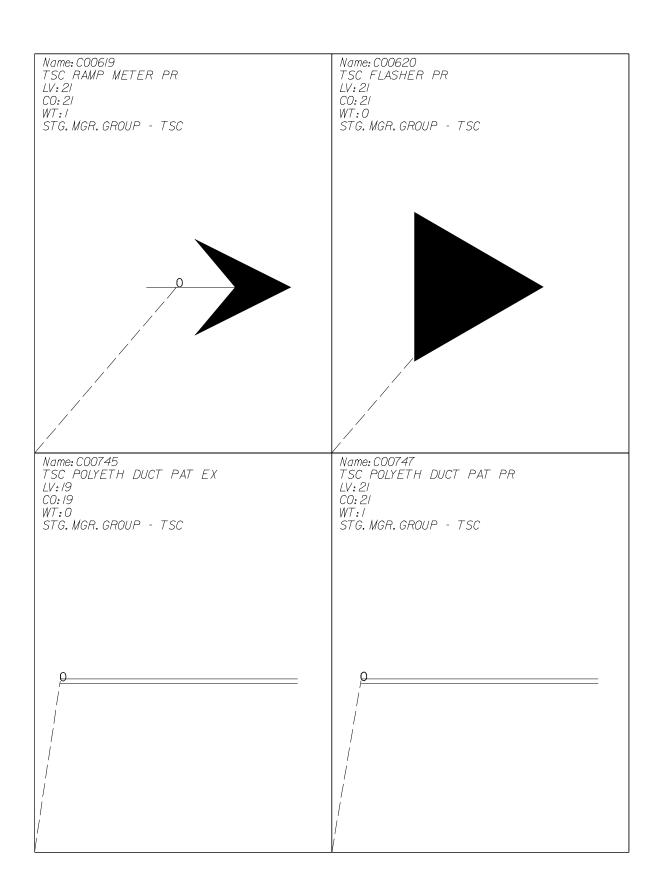


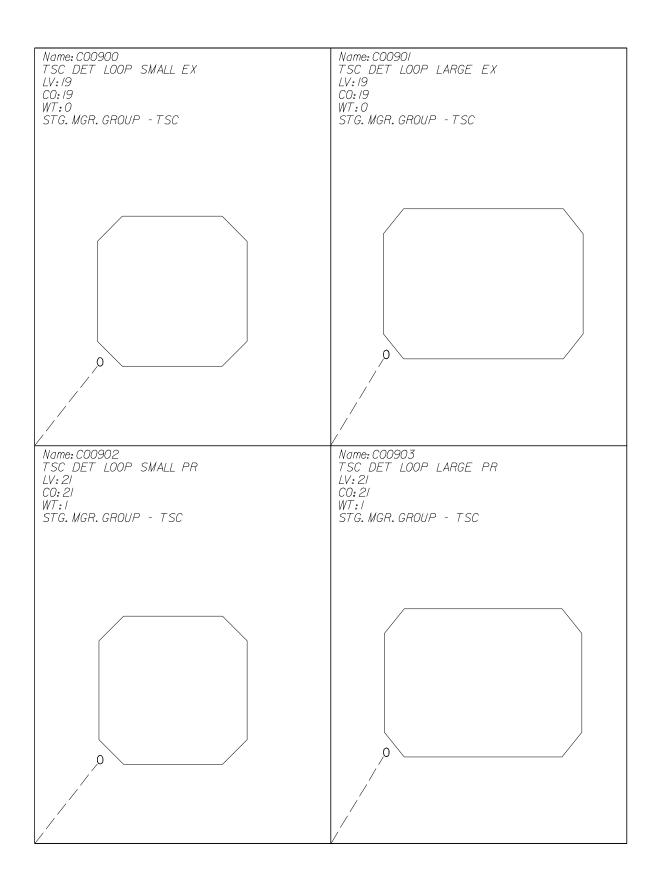












Name: C00937 TSC UNDGRD CABLE EX LV: 19 CO: 19 WT: 0 STG. MGR. GROUP - TSC	
ρ	
j'	

USER INFORMATION

Acrobat Tools:

To see previous view

To scroll through pages

To View the Cell Library: The Alphabetic & Numeric Index's are linked to the Cell Library. Click on cell name or number to view cell.

Support

For technical or content questions, call (217)785-5875.